Emergent Multilinguals and Making Inferences in Elementary Guided Reading Groups

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Leah Carey

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Advisors: Dr. Martha Bigelow and Dr. Lori Helman

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ABSTRACT

This study explores the topic of inference making with young emergent multilinguals. Literature demonstrates that inference making is essential for reading comprehension (Oakhill & Cain, 2007) and that the skill of inference develops before learning how to read. Inference skills may transfer as a child learns how to read (Kendeou, Bohn-Gettler, White & van den Brock, 2008). However, there are very few studies regarding inference skill with young emergent multilinguals, that specifically account for the factors of multilingualism and from descriptive and qualitative approaches. This action-research study in a second-grade classroom with English learners focused on the following research questions: 1. How can I scaffold instruction to support inference-making during guided reading in my classroom? And, 2. What student actions and dialogues take place when my students attempt to make inferences from text and images? After thematic coding and analysis of transcriptions, journals and artifacts, findings showed that differences in prior knowledge, using visuals and explicit questioning were important considerations for supporting the learners. Learners also demonstrated a variety of modes and strategies (i.e. peer interaction, facial expressions, gestures, pointing) to explain their thinking and occasionally demonstrated their developing metacognition. The transcripts and field notes also demonstrated inconsistencies in students' abilities to infer within texts, implying the contextual basis of making inferences and individual differences in interactions with texts (e.g., dispositions, experiences, skills). Other implications of this study include using pictures to practice comprehension skills, as the study demonstrated more discussion and ease with regards to making inferences, as decoding text was not an element of that activity. Results of this study point to the need for further study on reading comprehension with multilinguals, specifically from a framework that takes into account the experiences, culture and background of students. Additionally, a focus on the process of inference through classroom-based research, could lead to findings more relevant for practitioners and that support student learning. Further research could benefit from utilizing sociocultural and discourse frameworks to inquire about multilinguals' multitude of developing skills and abilities.

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CHAPTER 1

INTRODUCTION

"Rich literacy learning depends on relationship building within and across multiple settings, and is sensitive to how meaning-making processes are influenced by where in the life course learners are." (Carol Lee, 2015, p. 290)

Comprehension and literacy development are complex processes among monolingual children and made more complicated when children possess multiple languages. In the US, English learners as below-average in reading comprehension, as measured by and demonstrate a need for improvement in instruction and to further explore and understand the literacy development and comprehension processes of multilingual students (Nation's Report Card, 2015). Traditionally, reading development has been studied from the premises of reading as a cognitive process and group of skills to be mastered. However, in this paper, I argue for the expansion, and less restrictive framework, of reading research that includes and encourages the diverse experiences and knowledge of multilinguals.

Specifically, the skill of inference, has limited research with young multilingual learners, with much of the research focusing on monolingual learners, learners from more homogenous cultural and ethnic groups, and on bilingual learners that are within adolescent and adult age groups. The skill of inference is essential to reading comprehension, and research recommends using explicit comprehension instruction with multilingual and monolingual students to build skills and understanding, as well other oral language development and explicit vocabulary instruction (Goldenberg, 2008).

Inference ability can develop through engaging in different types of media such as television, or read-aloud stories, and life experiences in early childhood, which has implications for developing inference outside of reading contexts, before children are literate, such as transfer of skills to later reading development (Kendeou, Bohn-Gettler, White & van den Brock, 2008). However, inference is a difficult skill and scholarly work from educators and researchers suggest that should be explicitly taught, as less-skilled readers have the most challenge in producing coherent representations of texts and quality inferences (Oakhill & Cain, 2007).

Additionally, some research demonstrates potential mediation and scaffolding opportunities through the use of visuals and aural sources for inference-making with emergent multilinguals (Kendeou, Bohn-Gettler, White & van den Broek, 2008). Additionally, the use of multiple modes in student responses may also be an important point of consideration, especially for students developing in their oral language. Recognizing the assertion that young learners can infer at young ages, outside of reading, research also shows that young children move between modes (gestures, expressions, drawing, writing, reading, etc.) easily and "spontaneously" (National Council of Teachers of English). The movement between modes may provide implications in how we provide instruction, such as using more visuals and multimodal scaffolds, and study literacy with young multilinguals. Recognizing multilingual, multiple modes of support and expression as valid sources of making-meaning may not only improve instruction and learning, but may also improve classroom dynamics and affirm identities (e.g., Cummins et al., 2005; Ntelioglou, Fannin, Montanera, & Cummins, 2014).

Finally, more recently, scholars that engage in the topic of inference-making with young learners have discussed potential in more research surrounding the process of inference, in that most research and instruction focuses on the product of inference (i.e., a statement/conclusion), rather than the process of inference (i.e., what knowledge and evidence do children use and how do they use it?) (e.g., Oakhill & Cain, 2007; Kendeou, McMaster & Christ, 2016). Using the review and synthesis of the literature on this topic and my own teacher experience, my inquiry was grounded in observing and supporting the process of inference-making in my own classroom.

Statement of Problem

Making inferences with texts is a very important skill for learners, and is directly connected and central to comprehension (e.g., Oakhill & Cain, 2012; Anderson & Pearson, 1984) and is needed to build text coherence (Kendeou, van den Broek, White & Lynch, 2007). While skills like decoding and phonemic awareness are essential for English reading proficiency, English learners benefit from a culturally relevant, interactive, and balanced literacy approach, further providing access to higher level thinking and comprehension skills while foundational skill-building. A focus on inference as a product in prior studies, rather than the process of inference has also left out important work that relates to observing and supporting inference in-action within classroom contexts.

In order to make an inference, children need to utilize their prior knowledge, which requires that children have experience with or enough knowledge of a topic to make a reasonable conclusion. Because inference is an integral skill within reading comprehension, limited literature with multilinguals and the differences between L1 and

L2 literacy and language learning, there is a need to explore how younger multilinguals process and make inferences from texts (Byalistock, 2007; Melby-Lervag & Levag, 2014). The process of inference-making is complex, and multilingualism only inspires more inquiry surrounding the topic, perhaps with increased study on the instruction and classroom discourses of making inferences. Specific attention to sociocultural factors, linguistic backgrounds and prior experiences, especially at emergent literacy levels, may expand understanding of comprehension and inference making with young multilinguals.

Purpose of the Study

This action-research study provides exploratory evidence and analysis of the dialogues and actions of young English learners as they make inferences, and aims to contribute to conversations involving sociocultural factors, integrated teaching and research methods, and analysis of reading comprehension. Inference is an important skill to develop with learners, claimed as a core component of and inseparable from reading comprehension (Oakhill & Cain, 2007). This study explores how English learners make inferences in small-group classroom settings, and how educators can better support inference-making.

With prior informal data analysis in my own teaching context before this study, my colleagues and I (during 2015-2016 school year) found that our second grade (age seven to eight) language learners needed explicit support and multiple opportunities to make quality inferences. This informal analysis was a result of weekly planning time and professional learning communities, called “data teams” in our context. The purpose of data teams was to focus on a problem of instruction based on standards of instruction and current data in reading or math. We met weekly as a team, and decided to focus on

reading for the 2015-2016 school year. Upon looking at our reading benchmark assessment data (Fountas and Pinnell reading level assessment) and discussing informal observations, we realized that our emergent English learners had more trouble with the inferential questions at the end of the assessment. Therefore, we focused our data team Spring 2016 cycle on implementing strategies and assessments related to inference questioning. We found that basic supports such as sentence stems, giving adequate background and previewing vocabulary helped our students. Reflecting on the curriculum and texts available to us, my colleagues and I also recognized the importance of our students' engagement, accessibility and relatability to guided reading texts in relation to comprehension. We realized that some of these texts perhaps were not familiar to our English learners, with topics involving pets and family celebrations.

Data analysis and collaboration with my colleagues led to further inquiry surrounding making-inferences and what making inferences looks like and sounds like with elementary-age multilinguals. This particular study began as a series of questions about the prior knowledge and inference-making of my emergent multilinguals, and how they expressed it during and after reading, with earlier observation that comprehension is a highly contextual skill dependent on complex individual differences.

Emergent multilinguals may have many dynamic skills and experiences outside of their schooling experiences and English learning, which may influence literacy skills, engagement and their articulation of understanding various concepts (Lam, Warriner, Poveda & Gonzalez, 2012). Additionally, with students who are still developing in their English language proficiency, it can be difficult to truly assess the knowledge and comprehension of emergent readers and writers. Thus, combining my knowledge of

English reading development, cognitive reading frameworks and sociocultural views on multilingualism, I sought to explore how we can better support young English learners in comprehension and inference. More specifically, my research questions ask how to support young emergent multilinguals and their inferences and, inquire about the actions, dialogues and discourses that take place in the classroom contexts while students are making inferences. These inquiries may contribute to broader conversations on how multilinguals use their experiences and knowledge in order to comprehend texts.

Significance

Although the skill of inference is important, and was the focus of this study, my research served as a stepping stone for broader questions and further study about reading comprehension with emergent multilinguals. Young multilinguals are underrepresented in reading comprehension research that follows critical, sociocultural perspectives, descriptive and/or qualitative methods. When scholars focus only on reading proficiency, assessment and cognitive approaches, we miss opportunities to analyze and engage contextual influences such as cultural, classroom and home contexts that may foster specific literacy skills and knowledge. Sociocultural and discourse approaches are research spaces that need to be explored, specifically with higher-order comprehension, such as inference-making. As I've engaged in academic work from a practitioner lens, my developing epistemological beliefs align with sociocultural theories and practice, including epistemologies that work towards a child-centered approach to research. In using the term "child-centered," I advocate for more focus on child experiences, interactions, knowledge, and sociocultural influences and classroom discourses in order to better understand their learning. Expanding definitions of literacy are inclusive of the

many ways we read the world outside of traditional reading and writing (Freire & Macedo, 1987) and that children use several resources when reading. Therefore, I assert that one of the tasks of educators and scholars includes engagement with learners' knowledge and experience in order to better serve learners.

Through my experience and research, I contend that student experience, prior knowledge and interest contribute in important ways to reading comprehension, engagement and success. Few studies of inference-making skills focus on young English learners. Many studies on reading comprehension emphasize mainly cognitive frameworks and quantitative methods, lacking the descriptive methods needed to holistically analyze inference-making, such as discourse analysis and interviews. Classroom data may provide more insight on student prior knowledge and experience, and further provide more of an asset-based view of the students in that the research focus related to the work students could do in school in relation to inference, which also brought about observations of individual skills and experiences of the students. My exploration of student interactions and behaviors demonstrated the dynamic contextual processes of reading, specifically with multicultural and multilingual student populations. I also recognize the need to expand and analyze the many modes and literacies my students utilize to make meaning. Before I continue to the next chapter of my literature review, I discuss terminology of English language learners.

Terminology for English Language Learners

In an effort to provide a more asset-based view of English language learners, a few different terms will be used to define these learners. The most familiar terms to those surrounded by and working with these learners in schools in Minnesota are "English

Learners" or "English Language learners," defining these learners by the language they are learning. I will use these terms occasionally throughout the paper for specificity. However, as a result of Ofelía García's research regarding English language learners, I have chosen the term "emergent multilinguals", in order to emphasize the assets our students bring to school and that fact that they possess dynamic and distinct skills when synthesizing information. This term also recognizes that our emergent multilinguals may come to school with multiple languages, dialects and multicompetencies (Kleifgen & Garcia, 2010). Out of personal experience and research, I also prefer to use the term emergent multilinguals most frequently, because many of our students come to school with two or more languages and literacies already, with the inclusion of dialects as well. The terminology aims to recognize the way in which these students perceive and experience the world and their learning experiences, in that language learning is not akin to the experience of two or three monolinguals but rather an amalgamation of experience and knowledge to build a multilingual identity (Lam, Warriner, Poveda & Gonzalez, 2012; Stavans, 2015). Furthermore, to describe the educational context of the learners, "English as an Additional Language" will be used as well to recognize the unique knowledge and experiences of these students and language learners.

My action research study is grounded in prior studies with younger children and reading comprehension. The next chapter, the literature review, will elaborate on theoretical frameworks, research surrounding young children and inference, skills needed for inference and supporting young emergent multilinguals. Following the literature review, I will discuss my methods, action research as a methodological framework, my analysis and findings, implications and conclusions.

CHAPTER 2

LITERATURE REVIEW

Understanding the reading processes of emergent multilinguals can be challenging because the intersecting process of language learning and reading are seemingly infinite. Literacy instruction in elementary school involves interacting with and understanding a wide variety concepts and texts, and reading comprehension research shows that young English learners need more and specific support in comprehension (National Report Card, 2015), compared to those learning to read in their first language. For example, in 2015, 68 percent of fourth grade English language learners were below basic proficiency in reading, indicating a need for further focus on supporting emergent multilinguals in reading. Additionally, the University of Minnesota's Minnesota Center for Reading Research paper on English learners (2015) outlined that as learners develop in their reading and oral proficiency, they should be explicitly taught comprehension skills. One of these comprehension skills and processes, inference, is seemingly more complex as it requires a multitude of experiences and knowledges, and there are few studies that explore inference with emergent multilinguals.

Inference, as evidenced by the literature reviewed later on, is integral to comprehension and helps to build coherent representations of texts, and has been studied widely in monolingual learner contexts. My arguments and study argue for more sociocultural research and study of classroom discourses regarding inference-making with multilinguals, as an absence of contextual accounts is apparent throughout the existing literature. Though I realize that cognitive frameworks may help us understand the complexities of higher-order comprehension, and provide even more rationale for

more work on this topic. It is also important to recognize that the research available on this topic is overwhelmingly based in cognitive research, therefore impossible to dismiss, but provides ample space and necessity for sociocultural and contextual work. It is my assessment of the existing research that further work on the topic of inference-making should combine theoretical frameworks and considerations from second language acquisition, sociocultural theory, and cognitive literacy research. Therefore, in continuing my discussion, I will use prior cognitive frameworks to help address and counter my argument, and further add to the idea that comprehension and inference-making are complex, and necessitate continued exploration and study.

Kendeou and colleagues have engaged in significant research surrounding cognitive frameworks of inference and reading comprehension, focused on the inferences of monolingual children who are of early childhood and elementary school age. Kendeou, van den Broek, Helder and Karlsson (2014) outline the cognitive complexities of reading comprehension stating that,

> to comprehend a text as a whole, the reader needs to process and connect individual idea units, resulting (if all goes well) in the construction of a coherent mental representation of the text. For these processes to be successful, many factors play a role, including reader characteristics, text properties, and the demands of the reading task (Kendeou, et al., 2014, p.10).

Kendeou and colleagues recognized many factors for successful reading comprehension, including among them, minimally, reader characteristics. More recognition of individual, sociocultural factors seems important. The addition of a sociocultural lens to their cognitive work, that asserts that readers need to "process and connect individual idea

units," (p. 10) would perhaps recognize that these individual idea units (i.e., events in the story, concepts) may not be readily accessible or familiar to all learners. Hence, with prior cognitive work in mind, we need to further learn more about multilingual students and their comprehension, connecting to a sociocultural lens as well, recognizing that ideas and concepts in text and school are not necessarily universal knowledge for our students.

This literature review presents an argument for more research regarding higher-order comprehension, specifically inference-making, that includes sociocultural factors, classroom discourse, contextual-based methodologies and research to recognize actions, behaviors, interactions, needs and challenges of young emergent multilinguals in relation to text comprehension. The skill of inference has been studied with several groups of learners, but very limited qualitative research exists for younger, beginning English language learners. It is also important to note that studies on monolingual students emphasize quantitative analysis, and further exploration warrants critical, sociocultural and descriptive approaches with multilingual children. Specifically, practitioner and research communities may benefit from studies that observe and analyze the variety of actions and dialogues between peers, students and teachers, hence providing a more multifaceted view of the processes and behaviors *during* reading.

The scope of research included in this review synthesizes early childhood and elementary reading theory and practice and language development, to discuss and speculate about implications in inference teaching and learning for young emergent multilinguals. Additionally, the analysis of the existing research further alludes to a deeper, overarching need to make text and reading relevant to diverse readers, explicitly

invoking prior knowledge, including peer-interaction, increasing accessibility to concepts, and providing culturally relevant texts and materials. Reading comprehension for emergent multilingual learners necessitates differentiated instruction and varied supports, but more research is needed on specific instructional processes and the influence of sociocultural factors on reading comprehension. Therefore, as many of the skills, processes, and scaffolds outlined in the literature have been implemented on more homogenous populations, this topic warrants specific study in relation to second language acquisition, literacy development, reading comprehension and funds of knowledge of young emergent multilinguals.

L1 and L2 Literacy

Before the following discussion of theoretical frameworks and studies on inference-making, it's important to recognize that much of this literature review focuses on studies and research with monolinguals, as a result of the absence of literature on inference that specifically addresses multilinguals. Studies that utilize longitudinal and contextual accounts on literacy development of L2 learners are limited, and cannot generalize the experiences of all learners, suggesting future empirical study of language learners as they grow in proficiency and literacy skills.

Multilinguals and monolinguals engage in reading processes differently, because of the many factors, experiences and exposures to multiple languages and literacies. Bialystock's (2007) review positioned the relationships between L1 to L1, L2 to L2 and L1 and L2 oracy oral language skills and literacy as constant interactions, noting that transfer of skills from L1 may help L2, depending on orthographic systems, similarities and use of L1. She specified that the links between the same languages with different

modes might be more predictable, as she noted specifically that L2 oral language skills and L2 literacy development had a positive correlation in prior studies. She further recognized the need significant development in L2 oral skills to build literacy in L2, which has implications for more discussion and oral language development in reading instruction, and hence, perhaps a focus on discourse and sociocultural frameworks that illustrate student interaction.

A meta-analysis by Melby-Lervag and Lervag (2014) studied differences between second language learners and monolingual learners in regards to the reading comprehension skills and underlying components (e.g., decoding, phonological awareness) of both groups. They reviewed 82 studies with empirical data and accounted for 567 effect sizes between second language learners and monolingual learners in relation to reading comprehension skills and underlying components. Although they recognize the challenges language learners have in regards to comprehension, this study is very broad, including several terms that overlap or can be distinct, such as English language learner, and bilingual. The broad inclusion of terms and studies was purposeful and stated in the study. The study also showed a discrepancy between the amount of monolinguals included in the meta-analysis and the second language learners, with 111,418 monolinguals in the studies they analyzed and 15,137 second language learners. Additionally, a deeper discussion of subgroups (e.g., English learners, immersion, SES, home language, etc.) and the varied schooling contexts of language learners, may provide readers with more clarity on the cause of differences. They generalized that second language learners were at a significant deficit in reading comprehension and language comprehension in comparison to their monolingual peers, citing previous literature that

socioeconomic status, prior literacy in L1 and oral language skills in both languages contributed to the skills and growth of L2 learners. Similar to Bialystock's review, they discussed that L1 knowledge and experiences may contribute to L2 proficiency and learning, but they noted the importance of vocabulary development in L2 for proficiency and understanding in L2. They also contended that L2 vocabulary had a larger effect on L2 literacy than other factors, such as phonological awareness and decoding skills. Both Bialystock and Melby-Lervag and Lervag's reviews explicated that sociocultural and socioeconomic factors may be even more significant in determining proficiency and learning, further specifying that experiences, access to materials and educational statuses of family members impact reading development. These studies have merit in regards to explaining differences in second language acquisition and general areas of support for English learners, but lack a focus on English learners in specific contexts and age groups, which would provide more useful data for practitioners perhaps. Meta-analyses and large scale reviews may be more helpful in indicating areas for further research, but offer limited information that specifically adds to the discussion about emergent multilinguals in early elementary school in diverse, English learner contexts. Additionally, Riches and Genesee (2006), explained that bilinguals may have greater advantages if able to access their bilingual repertoires, though current schooling practices for language minority learners can inhibit this access, implicating a need to capitalize on student knowledge, home language(s) and experiences further literacy development. Finally, because the research on relationships between L1 and L2 and acquisition of L2 literacy expound upon the many complexities and aspects of involved in L2 literacy development, studies using purely cognitive and/or quantitative frameworks on monolingual reading comprehension

may not adequately explain the comprehension development of emergent multilinguals, and therefore this literature review is just a starting point for further inquiry and research needed.

Prior Research on Inference

The present research on inference-making began with building deeper understanding on what inference is, and how cognitive frameworks describe inference processes and products in reading. These cognitive frameworks enlightened understanding of inference, but also led to recognition of an abundance of cognitive theories and studies and less available research on sociocultural/contextual accounts of literacy development, with few studies that specifically address higher-order comprehension skills, like inference-making, from a contextual and descriptive approach. Nevertheless, as mentioned, cognitive frameworks can help reason the argument for more contextual approaches through recognition of the multiple factors involved in inference and reading comprehension, and build foundation for sociocultural approaches and discourse studies.

As cited throughout the literature review already, Kendeou and colleagues' work on inference has provided distinct and foundational understandings of inference with young children, but does not parallel any research being done in the field of second language acquisition. This work is important and helpful for understanding inference, but not sufficient to understand the contextual components of making inferences with multilinguals, such as sources of prior knowledge. Nevertheless, I recognize that implementations of cognitive frameworks with children may provide initial theorizing with multilinguals who are developing traditional literacy skills for the first time.

Current research largely excludes primary grade-level (kindergarten through second grade), emergent multilinguals in studies about metacognitive reading comprehension, and has generalized that lower language proficiency and lack of basic language skills (phonological and phonemic awareness, letter identification) prevents learners from articulating inference and expressing higher-order thinking (e.g., Farrell, Davidson, Hunter & Osenga, 2010; Gough & Tunmer, 1986). Studies on inference with bilingual learners also lack inclusion of various immigrant populations, with East African, Southeast Asian and refugee populations underrepresented. Moreover, it's important to keep in mind that inference is a metacognitive process that synthesizes learner knowledge with textual or other media knowledge and that learner knowledge and experience cannot be explicitly known or assumed. Therefore, this underscores a need for studies that specifically explore the diverse experiences and knowledges of young emergent multilinguals in connection to literacy and reading comprehension.

Theoretical Background on Inference

Inference as integral to comprehension. Readers' understanding is dependent on their ability to connect events and information within texts, and bring in information outside of texts to make conclusions and thus, researchers have argued that inference is not simply a skill, but rather a core component of comprehension. Inferences made with texts can be defined as information that is from memory and experiences or from reading to obtain information is not explicitly stated in a text (Elbro & Buch-Iversen, 2013). Similarly, Kendeou et al., (2008) defined inference, which will be the definition and understanding used throughout the literature review, as the process of identifying

"meaningful [implicit] relations between the various parts of the text, and between those parts and the reader's background knowledge" (p. 259).

Studies of inference since the 1970s and 1980s have focused on cognitive views of reading comprehension, examining technical and linguistic factors of reading comprehension. Definitions of general inference skill are similar, and most prior research on inference in reading texts claims inference as integral to comprehension and assists with causal connections, or general story coherence. Trabasso, Secco, and van den Broek (1984) claimed that inference ability is key to coherence in that inferences provide the "arcs" between events and help with causal connections in stories (p. 5). Oakhill and Cain have also engaged in considerable research surrounding inference and concur that inference is inextricably linked to success in reading comprehension, and that it is not merely a "by-product of comprehension" (Oakhill & Cain, 2007, p. 62). McNamara (2012) further explained that inference is essential for comprehension, stating that "at the core of comprehension is our ability to mentally interconnect different events in the text and form a coherent representation of what the text is about" (p. 29). Therefore, as research has emphasized the importance of inference in reading comprehension, it merits spending time and effort on the skill of inference and how we can develop it with our younger emergent multilinguals.

Inference as skill, process and product. People make inferences inside and outside of reading contexts all the time, research has found that young children are capable of making inferences between events as young as two (e.g., Kendeou, McMaster, & Christ, 2016; Bauer, 2007). Inference, coupled with comprehension is a complex

process and Oakhill and Cain describe the cognitive events that occur as children infer and comprehend,

> Children need to be able to simultaneously store and process information in order to integrate information within a text, to integrate prior knowledge with text when generating inferences, to monitor their ongoing comprehension, and to structure the causal and temporal sequence of events in a narrative (Cain & Oakhill, 2012, p. 96).

As stated, there are several processes taking place when a child makes inferences. Connecting Cain and Oakhill's description to L2 literacy provides greater purpose for working to understand these processes with multilinguals, and in turn, developing studies that are tangible to pedagogical practices and classroom contexts.

As children age, the quality and quantity of their inferences improve (e.g., Kendeou et al., 2014; van den Broek, 1997; van den Broek et al., 2005). A few studies by Kendeou and colleagues involve young children and question how these students may transfer their inference ability to text-based activities, citing that inference-making happens well before literacy skills develop (Kendeou et al., 2014). Notably, Kendeou et al. (2016) did further work on text-based inferences and differentiates between the process of inference, which happens during reading, and the mental representation of the inference, which is a product or a statement of the inference. In the review, they contend that there is very little research and assessment that focuses on the process of inference rather than the product, which would seemingly be more useful for educators to help children as they process, indicating that there is still much that we can explore empirically about the process of inference. Though preliminary, Kendeou and colleagues

(2016) used findings, after assessing children, to hypothesize how the children made inferences during reading, which might provide insight, if these findings were more descriptive, on the processes and observable behaviors, such as assessment of prior knowledge, participants drawing on knowledge during reading, and answering inference questions while reading. With this recent work, there was no description of looking for explicit observable behaviors or discourses with students, alluding to a need for further development of research that describes inference "in-action," and has direct connection to teacher practice and assessment.

Types of inferences. There are several classifications of inferences (see table below). The following lists and descriptions do not encompass all types of inferences, but are most relevant for early readers. Graesser, Singer and Trabasso (1994) were foundational in the field of inference in that they articulated various types of inferences found in fictional texts such as global inferences, and inferences about goals (e.g., The chicken wanted to cross the road), motives (e.g., The dog was hungry) and feelings (e.g., The girl feels proud). Graesser et al. (1994) reviewed various studies on inference and further explained that narrative and fictional texts, enabled a wider variety of inferences, especially related to coherence, due to the nature of storyline and relation to everyday events, which is notable as we consider teaching inference with multilingual learners. Kispal (2008) also reviewed significant literature in a seminal paper called "Effective Teaching of Inference Skills for Reading," encompassing several definitions and classifications of inference, strategies for teaching inference.

Table 1: Types of Inference (Kispal, 2008, p. 22)

Name	Example	Explanation
Coherence or intersentence or text-connecting	Peter begged his mother to let him go to the party.	Maintains textual integrity. The reader would have to realise that the pronouns 'his' and 'him' refer to Peter to fully understand this sentence.
Elaborative or gap-filling or knowledge-based	Katy dropped the vase. She ran for the dustpan and brush to sweep up the pieces.	Enriches the mental representation of the text. Drawing upon life experience and general knowledge, the reader would have to realise that the vase broke to supply the connection between these sentences.
Local Includes: 1. coherence inferences 2. case structure role assignments 3. antecedent causal inferences	 As above Dan stood his bike against the tree. He rushed off, leaving his bike unchained.	 Creates a coherent representation at the local level of sentences and paragraphs. The reader would realise that the tree is assigned to a location role. The reader would infer that Dan was in a hurry and left his bicycle vulnerable to theft
Global Inferences	about the theme, main point or moral of a text.	To create a coherent representation of the whole text, the reader would infer overarching ideas by drawing on local pieces of information.
On-line Off-line	Superordinate goals of characters or causal antecedents that explain why something is mentioned in the text. Forecasting future episodes in a text.	These inferences are necessary to understanding and are drawn automatically during reading. Inferences drawn strategically after reading, usually during a later retrieval task. Not essential to understanding.

Though my later study exemplifies multiple types of inferences, the focus of this literature review will be global inferences, also known as causal inferences, which are

often most difficult for younger learners and have been studied extensively (Kispal, 2008). Kispal (2008) describes global inferences as "coherent representations that cover the whole text" (p. 3), such as theme, cause and effect, but also utilizing local pieces of information to establish these representations. In literature, causal connections have also received considerable attention for decades, because they are believed to be central in the comprehension process and a skill that must be taught to learners (e.g., Kendeou et. al, 2007; Mandler & Johnson, 1977; Stein & Glenn, 1979; Trabasso et al., 1984). Causal connections are particularly significant and Kemper (1983) discussed that comprehension failure comes at a result of not being able to make causal connections, which may be a result of a variety of reasons, prior knowledge and sociocultural factors among them.

Studies on Younger Learners and Making Inferences

When multilingual (and monolingual) students are supported in developing the basic skills of literacy, language and comprehension, they can begin to utilize more complex metacognitive strategies in reading. As stated previously, prior studies have primarily focused on homogenous and/or monolingual populations. This section synthesizes and postulates on theory that could support the theory of inference-making of young emergent multilinguals. Specifically, I utilized research with younger, emergent-reader learners because both groups of students are often learning traditional literacy skills (i.e., decoding, phonological awareness, comprehension strategies) in English at the same time, and may have similar challenges and developmental considerations.

As mentioned, it's important to be cognizant of intersections of L1 and L2 and recognize learner differences, but studies have shown that specific language characteristics (i.e., letter-sound identification, phonics) may have more influence on

literacy development within the same language (i.e., L2 oral skills to L2 reading skills) (Bialystock, 2007). This perhaps aids future study and argument that connects previous research with young monolinguals to young multilinguals who are both learning to read in English for the first time. Language characteristics and foundational literacy concepts, which ultimately aid comprehension, but may not provide full explanation for discrepancy in inference ability, as a result of the skill of needing to locate and utilize various types of knowledge. However, as I argue for sociocultural approaches and further study with multilinguals' knowledge and experiences, there are limitations to what we can transfer to or hypothesize with young emergent multilinguals from studies with monolingual children as language differences and varying cultural identities and experiences are considered.

Studies in how young learners make inferences have been prominent since the 1970s, and young learners begin, and can be supported, to draw inferences at a young age (i.e., around age 3-4), with and without text-based materials (e.g., Kendeou et al., 2014; Kendeou et al., 2008). In reviewing research, in the 70s, Brown asserted that young children make causal inferences, but differentiated in skills, prior knowledge and reading ability. Brown (1977), explicates that inference in young children may be spontaneous with events in daily life, not with textual tasks, and proposed strategies to instruct children to draw on prior knowledge in text tasks. His explanations provide further implications for instruction with emergent multilinguals as their prior knowledges and experiences may be diverse, and points to pedagogies that include scaffolding, culturally relevant pedagogy, and building background with multilinguals.

Scholars such as Oakhill (1984) and Trabasso (1980, 1984) published important works in the 1980s that furthered the study of inference with young monolinguals. Trabasso established that background knowledge was critical to making inferences in stories, and studied the causal connections and inference skills of young children. He found that younger children may not be able to make multiple connections within a story, and are not easily able to draw inferences with longer texts (e.g., Trabasso et al., 1984; van den Broek, 1997), providing the case for mini lessons, teacher modeling, making inferences during reading and predicting as students develop the skill.

Oakhill has published and has been cited in several studies on inference and comprehension since the 1980s. One of her first studies found that less-skilled readers (in decoding, fluency, phonics) have more difficulties with coherence and inferential questions, especially without the opportunity to refer to the text (Oakhill, 1984). The study assessed 24 seven-to- eight-year-olds on their reading comprehension after reading short stories. Oakhill used vocabulary tests to initially separate children into two groups, "less-skilled comprehenders" and "skilled comprehenders." The children read four short passages that were of readability level age eight, and asked eight questions (literal and inferential) after the passage. The students also answered passage questions with ability to refer to the text, and answered questions without the text present. Students were timed in responding correctly, with 10 seconds to respond, and given additional prompting and 20 seconds if need be and if no response was given within 20 seconds, the response was counted as an error. The reasoning for the specific time limits was not noted or explicitly connected to research. Results showed that less skilled comprehenders were not able to answer as many questions without the text for reference, both literal and inferential.

Moreover, skilled and less skilled comprehenders relatively answered the same amount of inferential questions when allowed use of the text, but skilled comprehenders performed better, though Oakhill doesn't explain what "better" means from a descriptive account. Her study would have benefited from more descriptive accounts of the responses of students, given it was such a small sample size. Oakhill made claims on performance without providing a hypothesis or expectations for skilled learners, therefore readers are unable to signify the components or linguistic features of a correct response. However, important implications included the use and encouragement of using texts while answering comprehension questions with younger learners, a strategy that may provide appropriate support for language learners. She also mentioned using visual supports in her implications, such as pictures, to help less skilled comprehenders, which has been an idea used in later studies by Kendeou and colleagues.

Van den Broek's work in the 1990s continued to build theoretical frameworks from Trabasso's work, with a focus on causal connections (Broek, 1993; 1994; 1995). He developed significant theoretical frameworks that claimed (fictional) texts are built upon networks of causal statements or events, rather than limiting causal connections to pairs of ideas, implying that making inferences relates to the ability to connect and build coherence among multiple events. Oakhill and Cain (1999) continued study on inference with young children with a replication of Oakhill's (1984) study. They found similar results as the previous study, but also that differences between skilled and less skilled comprehenders may have attributed to difficulty in using comprehension strategies, rather than a failure of comprehension itself or lack of general knowledge, alluding to a need for explicit comprehension instruction with young children. Limitations of this study

included a lack of description of student responses and a seemingly homogenous monolingual group of students, alike various other studies during the 1980s and 1990s. These studies, though provide foundational theoretical constructs for comprehension and inference, do not represent the diverse students in many classrooms today, which suggests further research with linguistically, culturally and socioeconomically diverse groups of students.

More recent studies echo the limited participant demographics of prior studies, as well as a shortage of descriptions and discourses of student responses, and continued focus on assessments and quantitative measurements of comprehension. However, a few significant studies contribute noteworthy ideas for further consideration. Cain et al. (2001) continued their work with seven-to-eight year olds. They discussed the concept of knowledge in making inferences and outlined sources of error in the process of inference, such as the ability to integrate knowledge and evidence, which also may have connections to sociocultural implications of making inferences as students may not share or have access to the same knowledges and experiences. The goal of their 2001 study aimed to investigate listening comprehension, and the ability to draw inferences when knowledge was available, meaning that the researchers gave students information and built background knowledge prior to the reading and tried to eliminate knowledge deficits as a factor of drawing inferences. First, 26 students were taught a knowledge base, or built background about the readings by learning facts. Then, students were read a six-chapter story about the topic of the knowledge base, and then assessed with literal and inferential questions, and their memory of the knowledge base. Although students were read to by adults, significant findings showed that less-skilled comprehenders may have

more difficulty integrating and finding information to use to make inferences, regardless of building background prior to the read-aloud, connecting to pedagogical considerations of teaching children how to use information from their experiences and texts. Seemingly, as multiple factors intersect in L2 literacy and comprehension, implications of their study deserve more attention with multilinguals via future inquiry about multilinguals' skill in accessing their knowledges and integrating evidence from the text.

Regarding additional skills and developmental considerations of inference-making with young children, Rapp et al. (2007), also states that younger children are more likely to make inferences and are able discuss the actions of a character versus feelings or more abstract concepts. Additionally, younger children may not know how to use or express their prior knowledge, which necessitates the need of explicit instruction as well (e.g., Cain et al.; Elbro & Buch-Iverson, 2013; Oakhill & Cain, 2007). Oakhill and Cain' (2007), also review prior research and discuss other considerations for young learners in that young readers infer less spontaneously and that less skilled readers can infer, but not sufficiently for full comprehension. They further elaborate how early readers have their own "standard of coherence," meaning that some readers have a higher drive to establish coherence between events in the text, and that instruction in establishing a goal of coherence for lower readers, may be beneficial. In hypothesizing this in-action, we might think of early readers who simply focus on word accuracy and decoding, but do not stop and think about the text events. Therefore, based on their research, Oakhill and Cain further suggested comprehension monitoring as an important skill to assess and instruct in younger readers.

Later studies on younger, emergent literacy learners claimed that that young learners can make inferences well before they learn to read (e.g., Kendeou, Van den Broek, White & Lynch, 2007; Kendeou et al., 2008; Kendeou, White, Lynch, & Van den Broek, 2009). A longitudinal study by Kendeou et al. (2008) with 232 children, ages four to eight, separated into two groups, demonstrated that inference-making with other media (such as television, oral stories, and pictures) in early childhood positively correlated to reading comprehension and inference later in childhood. The study involved assessments on narrative comprehension. For the first assessment, younger emergent literate children (ages four and six) listened to a short-audiotaped narrative, and watched a short television show and followed-up with comprehension questions. For the final assessment, students were tested similarly with different materials, but eight-year-olds were given a reading passage with comprehension questions as well. Four and six-year-olds were also assessed on word identification, letter identification and phonological awareness. The results were not able to establish consistent relationships between word identification, letter identification and phonological awareness and inference ability over time, but showed that above language and literacy skills, inferences skills in early childhood with other media had a positive relationship with inference skills later in childhood and with reading texts. Kendeou and colleagues also noted that developmentally, inferences became more complex and children could make more causal relationships at around age eight. Implications of their study and assessments included using visual and aural materials as a way to scaffold instruction and comprehension as well as identification of children who might have comprehension difficulties later in childhood. This study is significant for inquiry surrounding emergent multilinguals and inference because it demonstrates the

benefit of using other modes to teach and assess comprehension and inference ability, with less emphasis on more difficult language or developing literacy skills. The study provides instructional applications in that learners may benefit from pre-teaching comprehension skills with visuals or aural materials. The limitations of this study included a seemingly homogenous, non-language-learner participant population (though not specified), and an absence of examples of the variety of responses from the children. Further inquiries of this work could include longitudinal study of emergent multilinguals and their inference ability while learning across languages, and correlations with monolingual peers.

The research with younger, monolingual children has several limitations in its applications to young emergent multilinguals. The studies discussed above presented important cognitive frameworks surrounding young learners and inference making, but did not elaborate on sociocultural considerations or the intersection of multiple languages when multilinguals make inferences. Further study could potentially replicate or modify previous work, but with the stipulation that literacy development with multilinguals presents more caveats and complexity in analysis in that there may be more linguistic, cultural and pedagogical factors to consider. The absence of studies that include discourse with young multilinguals provides rationale and opportunity to study inference extensively with diverse populations.

Pedagogical and Practical Considerations for Supporting Inference-Making

Instruction and assessment for inference is challenging as it is a complex metacognitive process that involves the reading skill, personal knowledge, experiences and reasoning of students. Reading research in the last 15 years indicates that young

English learners are capable of, and can be expected to make adequate growth in reading, similar to English-speaking students, if given high quality reading instruction (e.g., Gersten et al., 2007; Goldenberg 2011). A review of research entitled, "Effective Literacy and English Language Instruction for English Learners in the Elementary Grades" by Gersten et al. (2007) made several recommendations for schools and districts such as small group instruction, frequent assessment and monitoring, extensive vocabulary instruction, academic English development and peer interaction. It's important that English learners receive high-quality, scaffolded and direct reading instruction that incorporates appropriate comprehension skills *while* developing oral and decoding skills. The following section discusses classroom considerations and recommendations to facilitate inference-making.

Rapp (2007) states that "improving readers' inference-making skills may lead to substantial reading benefits" (p. 298), and discussed the importance of inference for reading comprehension and further benefits of targeting interventions for specific reading comprehension skills. Kendeou's work has supported a need for early childhood intervention and scaffolding in inference as well, and has demonstrated that younger children have the potential, and oftentimes the ability in various contexts, to make inferences but need the appropriate scaffolding and skill instruction (Kendeou et al., 2009). Many young emergent multilinguals, like their young monolingual peers, are developing in their literacy skills, and may experience challenges in comprehension. Yuill and Oakhill (1991) describe the possible constraints of making inferences for "less-skilled" comprehenders:

1. General knowledge deficits restrict less-skilled comprehenders' inference making.

2. Less-skilled comprehenders do not know when it is appropriate to draw inferences.

3. Less-skilled comprehenders have processing limitations, which hamper their ability to make inferences and integrate text information with prior knowledge. (Perfetti, Landi & Oakhill, 2005, p.232; Yuill & Oakhill, 1991)

Noting the constraints above, "general knowledge" can refer to learner background knowledge (which also includes differences in culture knowledge) and experience, and basic language skills of reading. Young emergent multilinguals are not exempt from these challenges, but their comprehension processes and articulation may be less salient with the multiple factors of language transfer and learning.

In review of the literature, several themes arose in regards to the skills needed by emergent multilinguals to generate inferences and generally succeed in reading comprehension. In the following discussion, I will regard the following themes and practical considerations as instrumental in supporting multilinguals and inference generation: (a) activation of prior knowledge and building background, (b) explicit instruction, (c) choosing culturally relevant materials, (d) academic language, (e) vocabulary development, (f) oral language development, (g) decoding and phonics instruction and (h) the use of visuals to aid instruction.

Prior knowledge and building background. Activating prior knowledge and building background are necessary, but difficult tasks, for inference-making, and was a salient theme in the research, and thus led to my inquiry surrounding contextual and

sociocultural factors of inference-making. Snow, Burns and Griffin (1998) stated how integral it is to build and incorporate background knowledge during reading,

> Every opportunity should be taken to extend and enrich children's background knowledge and understanding in every way possible, for the ultimate significance and memorability of any word or text depends on whether children possess the background knowledge and conceptual sophistication to understand its meaning" (p. 219).

In order to read well and build meaning, students need to build and extend their relationships with content in the text, and further engage with the text. Cummins (2015) explained that policy research largely ignores the significant relationship between literacy engagement and reading comprehension, meaning that students must be involved, connected to and interested in texts to comprehend well. In his discussion of language differences and reading comprehension, Cummins explained that multilingual students from low socioeconomic status backgrounds can be viewed as disadvantaged when they are not able to fit in with certain expectations of school achievement, language or background knowledge. However, he challenged the term "disadvantaged," and argued it as a contextualized term in that multilingual students only seem to be "disadvantaged" when their background knowledges and experiences are not supported by school systems. His discussion provides a further point of inquiry for later study in reading comprehension with multilinguals in that certain sociocultural norms and knowledges seem to be privileged by school systems, hence potentially affecting the learning and acceptance of certain students who have differing knowledges and experiences.

The teachers at times, must elicit prior knowledge and engage in questioning for inference generation, which connects to a need more practical studies and applications for understanding and teaching reading comprehension for multilinguals. In a study assessing 38 elementary school children's inference generation, Bowyer-Crane and Snowling (2005) asserted that children who have trouble with comprehension, have challenges with making inferences, and specifically found that inferences that required real-world knowledge were the most difficult for students, versus inferences that mainly relied on information in the book. Students read stories aloud and in silence, and subsequently answered a variety of literal and inferential questions. The results did not present descriptions of the texts or responses of the children, leaving out potentially important information as to what knowledge was required to make inferences, a significant factor to consider with emergent multilinguals. Although their study focused on monolingual learners who have comprehension difficulties, it brought up important points for further investigation such as helping children find and use their prior knowledge, and further inquiry in identifying general knowledge deficits and misunderstandings of concepts.

Teachers may not be able to fully understand the experiences and knowledge of their learners, thus indicating a need for intentionally incorporating learner experience, knowledge and building background together. Readers understand and approach text according to their schema, an internalization of past experiences and their experiences are made of semantic webs and links, interconnecting topics and experiences (Anderson & Pearson; 1984, Carrel, Pharis, & Liberto, 1989; Johnson, 1982). Marzano (2004) states that background knowledge directly correlates to academic success, and learners are more easily able to acquire new knowledge with prior knowledge. He continues to elaborate

that students from low-income populations, which often includes emergent multilinguals, are less likely to have access to various material resources that tend to be valued by educators, such as books and newspapers, during childhood, inhibiting them from having the "background knowledge for school success." This data continues to challenge educators to find ways to integrate and learn about the knowledge of their students, while building knowledge when students encounter unfamiliar topics in text. Instructional strategies such as questioning, building background and previewing content can help aid the inclusion of prior knowledge, and extend learning about topics. Tarchi (2005) activated prior knowledge by pre-reading questioning, discussion and book previewing, which proved to improve overall reading comprehension and inference generation, strategies that are recommended for language learners.

Home and additional languages can be a powerful factor of comprehension and inference ability. Calderón, Slavin and Sánchez (2011) declare that it is imperative that instructors are inclusive of the learners' primary home language and culture. They also discuss the significance of encouraging students to use home language with peers to build comprehension of tasks and text, further building a community of multilingual practice and strategy to complete a task, making it more likely for students to use when they participate in inference tasks. Phakiti (2006) notes that L1 and L2 are deeply intertwined when understanding how multilinguals read. Goodwin and Jimenez (2015), utilized translations to increase reading comprehension, Jimenez, García and Pearson (1996), recommended making explicit connections between L1 and L2 as well to facilitate comprehension. In Goh and Hashim's (2006) study with university EFL students, use of L1 broke down affective barriers, assisted in word-level and big idea understanding in

L2. Upton and Thompson (2001) also utilized think-alouds and discussion in L1 while reading in L2, which especially aided lower-proficiency learners. Using home language, even in brief peer (or teacher-guided) discussion and translating words can aid language learners, and should be considered as important prior knowledge when facilitating making inferences with younger language learners.

Finally, it must be noted that activating and building background knowledge is difficult because it relies on working to really know students, but also accepting that educators cannot always know the breadth and depth of experiences and knowledges of learners. Hammadou (1991) indicates that, although difficult to measure, difficulties in inference ability in relation to content topic familiarity are most visible as readers increase in proficiency level, which brings attention to further study in how to engage prior knowledge with emergent multilingual students.

Explicit instruction in comprehension strategies. Much of the research agrees that facilitating inferences need to be scaffolded and taught explicitly. A study by McKoon and Ratcliff (1992) proposed the "minimalist hypothesis," and they stated that most inferences are not generated automatically, with the exception of inferences based on explicit information or text, implying that students may need support in generating inferences. Emergent multilinguals require extra practice and support in reading comprehension and inference-making. Literacy instruction should incorporate many skills, as noted in research by August and Shanahan (2006) under The National Literacy Panel (NLP) project on developing literacy in second language learners, which indicates that instruction that provides substantial coverage of the key components of reading instruction (phonemic awareness, phonics, vocabulary, comprehension, and writing) will

benefit English learners. Within comprehension, explicit reading comprehension strategy instruction is also considered best practice with elementary learners, and is now a significant component of a balanced literacy approach in elementary reading instruction (e.g., Fountas & Pinnell, 1996; Tompkins, 1977). Research has designated that younger children must master decoding skills first, and later grades should work on comprehension. But, while current research also supports explicit foundational skills work, it also states the need for a balanced approach in literacy, even with beginner English learners. In agreement with explicit comprehension instruction, Trabasso and Bouchard (2002) also assert that "Most readers who are not explicitly taught cognitive procedures are unlikely to learn, develop, or use them spontaneously" (p. 177). This reality connects to a need for explicit inference instruction, as it is a difficult cognitive skill in reading and inference may not be spontaneous in reading with younger learners (Brown, 1977).

Various instructional strategies have been recommended to teach inference and reading comprehension skills. Pinnell and Scharer (2003) suggested reading "mini-lessons" to introduce strategies and practice in a balanced literacy framework. The interactive mini lesson includes four parts, introducing the strategy, explaining why the strategy is important to readers, demonstrating the strategy, and clearly stating what readers should do. This has been part of the framework of guided reading and whole group instruction, and facilitates understanding for all learners.

Verbal scaffolding has been suggested by Ankrum, Genest & Belcastro (2014) as a general strategy for young learners. In their study within a kindergarten literacy context, they outline the strategies employed by the teacher: prompting, praising (specific

feedback) and questioning. Explicit questioning has also been effective in numerous other studies with young children, (e.g., Norris & Hoffman, 1990; Richards & Anderson, 2003; Van den Broek, Kendeou, Lousberg & Visser, 2011). Van den Broek and colleagues (2011) illustrated their findings with very young children in that asking explicit questions about causal connections within stories (and across media) were beneficial interventions for these learners, especially during reading. Richards and Anderson (2003) also recommend a "How Do You Know?" questioning strategy with young learners, asking them to elaborate on their inference by citing outside-text connections after verifying that the author does not explicitly state something.

A technique often used by teachers in reading strategy instruction is the "think-aloud," which has also been used to facilitate inference generation. Kendeou and Van den Broek (2005) generalized that, when readers think aloud during a text, they are showing their attempts at establishing coherence. Think-alouds during reading, specifically in demonstrating inference, can be useful for learners when modeled by the teacher. Think-alouds allow learners to show their comprehension and causal connections by verbalizing their cognitive processes in building mental representations, which are otherwise not apparent (e.g., Clinton et al., 2012; Ericsson & Simon, 1993; Trabasso & Magliano, 1996). Using think alouds may also promote teacher understanding of student experience and knowledge through the verbalization of their own thinking and experiences, and enable teachers to provide further support and inclusive literacy practices. Think-alouds should also be practiced and modeled for multilingual learners as they may not only solidify causal connections in text for learners, but allow educators to clarify any gaps in

knowledge and understanding, and encourage students to use and share their knowledge and experiences.

Finally, Pearson (2009) also claims that the most difficult thing about explicit instruction is finding a way to make it a part of "daily life" in classrooms. It is one thing to implement strategy instruction for a certain number of minutes each day for the ten weeks of a pedagogical experiment, but it is quite another to sustain a strategy emphasis over an entire school year. (p. 22) This quotation, and preceding research implies that it is essential for teachers to make explicit comprehension instruction a consistent part of the curriculum, not simply limited to the literacy block, but in other content areas, in order to reap success for emergent multilinguals and make learning more meaningful. Furthermore, this means that explicit inference-making opportunities may be beneficial in other content areas, with a variety of content-related texts and tasks.

Choosing materials and culturally relevant texts. Emergent multilinguals are able to express comprehension when topics are familiar and culturally relevant. Research on culturally relevant teaching and instruction for English learners has shown that it is important that literature and materials reflect the experiences and cultures of students (e.g., De Jong & Harper, 2005; Ebe, 2012). Research in L2 reading has shown that prior knowledge about a topic influences comprehension and general academic success of students (e.g., Garcia, 1991; Jimenez & Gamez, 1996; Johnson, 1982) and that lower prior knowledge can have a negative impact on text comprehension in L2 (Brantmeier, Sullivan, & Strube, 2014). Avalos, Plasencia, Chavez and Rascón (2007), have advocated for a modified guided reading approach that includes choosing culturally relevant texts and explicit conversation about prior knowledge to facilitate reading comprehension.

Educators should work to invoke and learn about the prior knowledge of students to facilitate overall success with school and reading in L2 (Genesee, 2006). Although research tells us the importance of choosing appropriate and relevant materials for language learners, there are very few studies that replicate this work and show the significance of culturally relevant texts and prior knowledge with younger emergent multilinguals in leveled guided reading.

Vocabulary development and academic language. Numerous studies on language development and reading illustrate the significance of explicit vocabulary development and a focus on academic language with language learners. Emergent multilinguals are frequently reported as behind their monolingual peers in reading, partially because of vocabulary knowledge (e.g., August, Carlo, Dressler & Snow, 2005; Carlo et al., 2004; Chou, 2011). The United States Department of Education's Center on Instruction stated in their publication, entitled "Practical Guidelines for the Education of English Language Learners" that "mastery of academic language is arguably the single most important determinant of academic success for individual students," advising educators to incorporate explicit academic language instruction (Francis, M. Rivera, Lesaux, Kieffer, & H. Rivera, 2006, p. 7). In a study that involved fifth-grade bilingual Latino learners and reading development, Carlo et al. (2004) outline the difficulties English learners have with new vocabulary and state that educators should not rely on incidental vocabulary learning but rather, explicitly teach new vocabulary and academic language. August et al. (2005) supported explicit instruction, and points out several practices that assist emergent multilinguals in their vocabulary development: utilizing first language, ensure meaning of basic "Tier 1" words (Beck, McKeown, & Kucan,

2002), and opportunity for review and reinforcement. Dutro and Helman (2009) also discuss the importance of explicit language instruction to increase vocabulary and proficiency, and engaging in high-level tasks involving complex academic language. The ability to read, write and engage in conversation with academic language and vocabulary is integral for academic success, and emergent multilinguals require intentional support to build on these skills. The following two sections will focus on two of these skills, oral language and decoding skills, which have multiple and varied findings in research as to which skill is needed most to comprehend text, the relationship between both skills and independence of these skills in regards to inference-making (Kendeou et al. 2009).

Oral language development. Much research on oral language development and its relation to reading comprehension shows evidence of a positive correlation between the two. Helman (2009), states that "without a foundation of oral language, an understanding of text in that language will not flourish (p. 117). Though the effect of oral language development on literacy may be difficult to determine, as various factors are in contact when determining reading and writing growth, studies show that there are benefits in incorporating explicit oral language instruction. Prevoo, Malda, Mesman, and Ijzendoorn (2016), have found that oral language proficiency within-languages (i.e., L2 oral language to L2 literacy) is positively correlated to school success in literacy and reading for multilinguals.

Kendeou, White, van den Broek and Lynch (2009) recommended more longitudinal analysis of reading development and its relationship to oral language skill and investigated the relationship of oral language skills and decoding skills between reading comprehension in early childhood. Their longitudinal study assessed two hundred

and ninety-six children in two cohorts, age four to six, and age six to eight. They recognized that few studies conduct longitudinal analyses, which would seem to be more helpful for studying young children and their literacy development. Longitudinal studies could provide important, descriptive data as children grow and change at rapid rates, and could have the opportunity to highlight challenges students experience that may have later effect on reading development. They utilized prior research that concluded that preschool children can already make inferences orally across media, but wanted to see how comprehension and oral language development changed over time. Like previous studies, children were tested two times over the course of two years. The first time, children were assessed on listening and television comprehension, oral language, vocabulary, and decoding. The second assessment tested the same components except for letter identification and phonological awareness, and the addition of a reading assessment for eight-year-olds. The study found that oral skills positively correlated with development of oral skills two years later, which may connect to findings across modes and between languages in L2 research. Decoding skills also impacted early reading comprehension, but impact diminished over time, with more variance in the relationship between oral development and reading comprehension, implying that for children who are developing in their literacy skills may benefit from oral language development instruction and comprehension instruction in aural and visual modes. The researchers in this study recognized the homogeneity of their study, citing that 96% of their participants were white. This study could be further replicated with emergent multilinguals, but its results are limited in that factors in learning a second language, home language literacy

and home literacy environments were not discussed, as result of the homogenous participant population.

Swanson, Rosston, Gerber, and Solari (2007), also demonstrated that oral language skills had a significant effect on predicting L2 reading skills in bilingual 3rd graders, with significant variance between learner oral skills and reading comprehension than phonological skills and reading comprehension. They further suggested that oral skills could have a bigger impact than decoding skills after grade three and that phonological skills' impact on reading comprehension decreases as children grow older. Therefore, pointing to a further need to analyze how much time teachers devote to phonics and decoding instruction and how they teach these skills with comprehension skills.

Decoding skills. Often, readers have difficulty accessing and succeeding at higher-level skills and thinking such as inference when decoding, and lower level reading skills are not developed (Kendeou et al., 2014). Decoding text involves fluency and efficiency at the sound, morphemic and word level in order to fully understand a text, and is often a barrier to understanding with poor decoders. The "Simple View of Reading" asserts that language skills and decoding skills must be proficient in order to comprehend text, and that if one set of skills is challenging, reading difficulties arise (e.g., Farrell, et al, 2006; Gough, Hoover, & Patterson, 1996; Gough & Tunmer, 1986). Decoding skills are especially important for younger, emergent multilinguals and have significant impact on comprehension (Verhoeven & van Leeuwe, 2011), but there is evidence that demonstrates less of an impact of decoding skills on reading comprehension once multilingual children progress into older grades (Droop & Verhoeven, 2003). The

National Reading Panel (NRP) supported instruction in phonics and phonemic awareness, but also warned of excess instruction and emphasis, as lessons on decoding were not shown to have a significant positive effect after first grade (NRP, 2000). Droop and Verhoeven (2003) also elaborated a significant difference between decoding skills of second language learners from low-income socioeconomic backgrounds and monolinguals from high-income socio-economic backgrounds, pointing out the amount of exposure to (L1) text and materials as significant in beginner L2 readers. Home language literacy has been proven to aid and transfer to L2, more so than other language skills, (Bialystok, Majumder, & Martin, 2003), signifying a need to build and support L1 literacy with early readers.

Visuals and aural supports. Visuals, aural experiences and hands-on experience have been found to contribute to the ability to infer with younger children. Goldenberg synthesized research with English learners and discussed that utilizing visuals and hands-on-learning provide support for English learners in various contexts (Goldenberg, 2008). Using visuals and realia are also helpful for language learners in that it allows learners to move past decoding. Kendeou and colleagues (2009) elaborate that it is important to assess comprehension in non-reading contexts as well, further proponing usage of different media to facilitate inference generation. Graphic organizers can provide support when making inferences, during and after reading. Specific graphic organizers for inference have been created and include semantic mapping (Carrell, Pharis, & Liberto, 1989), observation and inference chart (Nokes, 2008), and an evidence-based "I say-It says-and So…" (Beers, 2003). Visual organization of metacognitive thinking through

graphic organizers has been effective strategy for emergent multilinguals and non-English learners alike, and can be used with a variety of topics and contexts.

Skills and scaffolds that support reading comprehension and inference include prior knowledge activation, building background, relevant materials, explicit instruction, vocabulary support, oral language development, decoding skills and visuals. Research has shown that with intentional inclusion and instruction with these skills and supports, emergent multilinguals are more likely to develop and succeed in classrooms. More practical and specific strategies have been developed and tried with multiple communities of learners, but with less research on young emergent multilinguals and the considerations of language learning, presenting limitations in regards to what results and theoretical constructs we can apply to language learners.

Conclusion

Assessing and scaffolding inference generation is difficult, as this still subsumes many other skills during the processes and products of the inference, such as prior knowledge, decoding skills, language skills and proficiency (e.g., August, Francis, Hsu & Snow, 2005; Hammadou, 1991). However, several researchers have asserted that young learners make inferences, and can do so across media before developing, and that building background of topics is especially important (e.g., Goldenberg, 2008; Kendeou et al., 2007; Kendeou et al., 2008; Kendeou, et al., 2009). Some of the most salient themes in the research assert the importance of activating prior knowledge and building background with students and explicit instruction and modeling. Also apparent was the utilization of practical strategies such as questioning, vocabulary teaching, "think-alouds," visuals and graphic organizers, and was common throughout the literature.

Though, there is much literature on the concept of inference generation and students, many of these studies do not account for the complexities of young multilinguals with inference generation, and even less research exists with descriptive, empirical work. The study of literacy development with multilinguals needs to be expanded to include more studies with younger learners, especially outside of more common English learner communities, so that we may learn more about sociocultural factors in literacy development. English learners' reading comprehension and literacy development are often presented as "below average" in the United States, which implies a need to seek out more effective practices that work with multilingual populations.

Grounded in the literature, my study utilized a scaffolded approach to explicitly teach and model inference generation to young multilinguals, using visuals, and multimedia to facilitate the process for early young multilingual readers. As drawing inferences requires students to use their background knowledge to construct meaning and coherence, classroom communities and interaction must encourage young learners to draw on their experiences and utilize culturally-responsive pedagogy daily. The literature implies the necessity for educators to reflect and respond to their own assumptions about content, and plan instruction that reflects the knowledge and experiences of their learners, further giving accessibility and opportunity for all students to engage in meaningful conversations about reading. Conclusively, more study needs to be done in the context of young multilingual learners who are beginning to read. The literature reviewed does not fully account for all the complexities of language learning and should be considered a synthesis of research to provide theoretical frameworks in the future.

Moving forward, methodologies and frameworks should include sociocultural methods and contextual accounts of literacy and comprehension instruction, and embrace the complexities of language learning and literacy. Furthermore, research should consider the amalgamation of prior knowledge and experience, language transfer, language skills and decoding skills in reading comprehension, and focus on these as factors for inference generation to potentially influence the replication or modification of studies discussed throughout this literature review with multilingual learners. My research questions that follow, focus on the process of inference in the classroom with language learners, and aim to explore the multitude of considerations of teaching and making inferences.

The research questions for this study and further discussion were developed as a result of personal classroom observation, the need for action-informing inquiry, and further motivated by the literature review. The questions aim for inquiry and analysis based in contextual approaches and are as follows:

1. How can I scaffold instruction to support inference-making during guided reading in my classroom?
2. What student actions and dialogues take place when my students attempt to make inferences from text and images?

Methodology for implementation utilized an action-research approach and is described in detail in the following chapter.

CHAPTER 3

METHODOLOGY

The methodology used for this study was broadly action research, but also inclusive of qualitative and discourse analysis paradigms. There were several reasons I chose to use action research (AR) as my main methodology for a few reasons, it allowed for the improvement of my own practice and teacher reflexivity, and would allow for analysis of student work and discourse regarding a specific and challenging reading skill. Action research is commonly described as a practitioner-oriented methodology. McNiff (2013) characterizes action research as addressing the human nature of problem-solving and making improvements in one's environment. This resonated with my inquiries into improving and creating more equitable and responsive literacy practices in my own classroom. In the following section, I will describe the overarching epistemologies and critiques of action research.

Action Research

Action research has long been used as a practice for educators to acknowledge and problem-solve an issue in instruction through strategy, or intervention, implementation and data collection. Action research can employ a variety of theoretical dispositions, methods and analyses, qualitative or quantitative. Action research has been both critiqued and valued by scholars in educational research. Epistemologically, it stems from pragmatic frameworks in educational research. Though critiques of action research frame action research as more practice-oriented, and less theoretical, Elliot (2004) emphasizes the embeddedness and necessity of both, rather than assuming a binary position of theory and practice as separate. Defined by Greenwood and Levin (2007) as

"a powerfully scientific approach" and a "pragmatic" approach to research, describing it as legitimate scientific research that is practical and differentiated (p. 1). Greenwood and Levin reference Latour (1987), reflecting on the need to apply research methods with cognizance of our "complex social world" (p. 3). They continue to describe scientific research in a socially-reflective manner, further defining scientific research as an "investigative activity capable of discovering that the world is not organized as our preconceptions lead us to expect and suggesting alternative ways to understand it" (p. 4). Dewey, an influence on the epistemological frameworks of AR, described scientific research as not separate from social action, but something that can transform and work to solve social problems. He also viewed children as not "empty vessels" but active participants in learning processes and advocated for students as agents of change (Greenwood & Levin, 2007). AR as an epistemology in education values the interaction and processes between students and teachers, and encourages a reflective approach to improve student learning and engagement.

In discussions of research methodologies in educational research, AR has been critiqued as "small-scale" or "local" research, revealing misunderstandings of the nature of action research, at times delegitimizing it as a contribution to the field and a source of valuable, descriptive information. Two distinct, and seemingly binary, perspectives arise in discussions surrounding action research: a. AR is open-ended, reflexive, and responsive to student needs, and b. AR is local, ungeneralizable, amateur and incapable of contributing broadly to educational research. I am ascribing to the view that AR provides a rich and descriptive opportunity to reflect on teaching and learning, and is necessarily "messy" as it attends to the needs of the students, as well as that it can and

should be shared in appropriate communities (i.e. school, scholarly) if it can improve or influence instruction in multiple settings.

A common critique of more practical epistemologies is that they fail to create knowledge for the larger research community, with too much focus on the practice, rather than the construction of theory. However, Nolen and Vander Putten (2007) recognize AR as a framework that perhaps doesn't need to develop theoretical frameworks to create knowledge, but rather it creates "relevant and practical knowledge" and "bridges the gap" between academia and the daily happenings of educators (Nolen & Vander Putten, 2007). Mills (2003) and Suter (2006), emphasized the benefits of locality and instructional improvement, with Suter stating that teachers can make "exemplary contributions to instructional improvement" through action research (e.g., Mills, 2003; Nolen & Vander Putten, 2007; Suter, 2006). Though, it's argued that AR may or may not be able to contribute to broader research communities, AR serves primarily to improve pedagogy and organizational systems, involving administrators, teachers, families and staff as the main actors.

Elliot (2007) argues against a dualistic view, but still argues for theoretical construction, and challenged the definition of knowledge in research, arguing for a theoretical and practical construction of knowledge in AR, valuing the interdependency of theory and practice as knowledge. Brydon-Miller and Greenwood (2006) have also discussed the difficulty of getting approval and larger recognition of AR studies, and described misunderstood characteristics of AR as assets, elaborating that AR may be "open-ended, collaborative, methodologically eclectic, and without specific methods, processes, or final goals determined in advance" (Brydon-Miller & Greenwood, 2006, p.

15). On the contrary, Zeichner and Noffke (2001) note that action research has been viewed as less rigorous and amateur by the academy and discuss that teachers alone, outside of an institutional affiliation, have been labeled as insufficient to carry-out meaningful educational research, claimed to be unfamiliar with the stipulations of true scientific process (Zeichner & Noffke, 2001, p. 299). The critiques and supports of action research seem to conflict over the purpose of AR, which at the heart of it, concerns instructional or organization improvement in specific communities. If the aim of educator researchers is to get published, then perhaps following Elliot's (2007) position makes sense, but also would most likely require training and knowledge in research methodologies and an affiliation with a scholarly community. Even so, the sharing of teacher action research, in non-scholarly contexts, although amateur, could benefit instruction in various contexts, and perhaps there should be more accessible and practical venues for educators to share their work.

The critiques and concerns that surround AR, position studies using the methodology as only beneficial and generative to specific contexts. Finally, it seems important to recognize AR as an epistemology and methodology that may start and extend conversations about important educational theories and practices in a variety of contexts, potentially contributing to Dewey's vision of research contributing to social change.

Action Research in My Classroom

Reflecting on my own reasons for using action research, it may be more conducive to evaluate action research studies by their attempts to respond to specific learner and community needs using a multiplicity of theories and practical strategies,

rather than their applicability to a wide-range of contexts. I chose qualitative methods of collecting and analyzing data, through observation, transcriptions, collecting artifacts and thematic analysis of discourse. I followed the common processes of AR, with reflection and action as central to my course of data collection and analysis. Sagor (2000) elaborates that AR can be used by individual practitioners, collaborative groups and administrators for the purposes of creating reflective practitioners, making progress on school goals and building professional culture. Action research follows a cycle of planning, action and reflecting, and several educational researchers have described this process. In earlier conversations of AR, Kemmis and McTaggart (1988) described AR's process as plan, act, observe, reflect. Berg (2014) also recommends a similar framework; (a) identify the research questions, (b) gather information (c) analyze and interpret data and, (d) share results. Primarily, in my study, AR served as framework and process for responding to my students' needs and thinking about inference-making instruction.

Setting and Participants

The setting of this action-research study took place in my classroom at a school in an urban, mid-western city. The school was composed of students from many cultures and language backgrounds, and though the following labels cannot and do not fully describe the experiences and backgrounds of these students and may not apply to all learners, the learner population mostly consisted of African-American learners, White learners, East African immigrant learners and Latino learners. There were approximately 39.4% English language learners and 65.5% of students on free and reduced lunch (Minnesota Report Card, 2017). The learners in this small group were representative of the school's multilingual population. The majority of the emergent multilingual

population identified as Somali and Latino, with language and literacy backgrounds in Somali, Spanish, Oromo, Arabic and English. Learners' levels of English proficiency vary from year to year, and are somewhat unpredictable, often determined by the measure, not the underlying proficiency. My classroom arrangement set the tone as conversational and community-oriented by sitting in a circle (see classroom layout in Illustrations, figure 2), on a rug, with an easel next to me for visuals and scaffolds. We usually began all classes and groups in a circle, in order to set a more communal atmosphere. Group and independent work, and any work that requires technology or modeling under a camera took place at pair tables in front of a "Smart board," but the students usually had choice in where they wanted to work. Any partner or group work was almost always intentionally selected by myself, and the students had a routine and visual for different partners for different tasks.

As action research requires researcher/teacher reflexivity, I believe it is significant to include my experience, positionality and epistemological leanings as an educator and developing scholar, to further explain my research motivations and purposes. My experience as an English learner educator spans four years working with younger, kindergarten to fifth grade, students. I have spent most of my time working with the primary grades with a vested interest in literacy development with early learners, and have prior experience working with multilinguals in other contexts as a tutor, early-childhood assistant teacher and interpreter. I also identify as a bilingual, as I learned Spanish in my later adolescence and undergraduate college years, eventually studied abroad, majored in Hispanic studies and taught in a migrant head start program that worked with the local Latino migrant community. My personal and professional

experiences have led me to focus my developing inquiries on the experiences of multilingual learners and their multiple literacies from a sociocultural lens. Throughout my time as a primary grades English learners teacher and working on my master's degree, I have devoted time to bettering my practice in literacy instruction and developing my theoretical knowledge in literacy.

The students involved in the study were four second grade English learner students, whom I saw daily for reading and language support, and also fit the district criterion of approaching or below grade-level readers and beginning/intermediate language learners. The students and I, as well as their families, have warm and conversational relationships, as I spent a significant amount of time with these students each day. I believe I provided an open atmosphere for conversation, multilingualism and inclusion of student backgrounds. My general policies surrounding language use were such that my students could express themselves in whatever language helped them create meaning, with the implicit understanding that we used English in whole group for the most part, unless we were clarifying. Students used their home languages with peers when they wished or needed to, but most prefered English. With my Spanish-speaking students, I often asked questions or initiated conversation in Spanish when talking about social topics or trying to clarify meaning with a student. Again, my students seemed to prefer English when working with me, but they knew that I am a bilingual and I often expressed myself as an "emergent bilingual" in description when providing examples of my own language journey.

To describe my students, pseudonyms are used for the students, and any direct identifying data has been omitted. However, the backgrounds, experiences, artifacts and

conversations are unchanged, as I'm trying make an authentic depiction of my students, knowing that the ability to infer is highly dependent on student background knowledge and experience. The lives of my students are complex, and I, as their teacher do not claim to know or fully illustrate their dynamic personalities and experiences. I utilize common phrasing and labels of race, social class and academic ability as a means to bring some understanding through common terminology, although I prefer not to simplify students by race, ethnicity or gender, or label them by their language or academic skills. The participants included two males, Ahmed and Jose, and two females, Naima and Mariana, between the ages of 7-8, with similar English language proficiencies and with home language backgrounds of Spanish, and Somali. Below are descriptions students, in order to provide background on these students. Although my general analysis was not a direct deconstruction of my students' identities and experiences in relation to their reading and comprehension ability, I acknowledge these categories and labels as contextual and temporal "categorisations" based upon my experiences and conversations with the students, and I recognize that "membership categorisations" are not equivalent to stagnant identities (King & Cronin, 2010), further understanding that children are learning how to negotiate and express their identities themselves, and my students are expressing their experiences and identities most often in a language other than their home language.

Table 2: Student Demographics and Language

Student	Grade	Age	Home Language	WIDA ACCESS Score- 2016	Years in District
Ahmed	2	8	Somali	2.9	2.5

Naima	2	8	Somali	3.2	3.5
Jose	2	8	Spanish	2.8	2.5
Mariana	2	8	Spanish	3.1	3.5

Table 3: Student Descriptions

Ahmed:

Ahmed is quiet, sensitive, and excited about school. He likes to listen to others and is very kind. He interested in transportation and science, and anything that moves. His older and younger siblings attend the same school and his parents regularly attend school events. He is of East-African descent and speaks Somali at home. He speaks English and Somali with his siblings, but prefers English at school. He has attended same school since kindergarten. Ahmed enjoys reading and writing in English, displays skills of independence by sounding out words, spelling basic sight words, and using visuals and personal dictionary. His overall 2016 WIDA ACCESS score was 2.9, placing him as a developing language learner. His other literacies include learning Arabic in "Dugsi" religious school. He chooses opportunities where he feels confident to speak, and seems most comfortable in small groups. He is able to speak with clarity in English and explain himself in most situations, especially in social situations.

Naima
Naima is very outgoing, social, and eager to share. She frequently shares about her learning and observations and is very friendly to other students. She is interested in jewelry, dolls, clothes, princesses, Disney characters, science, social studies and reading. Naima likes to please those around her and likes to compliment others on good work. She has an older sibling in school, and parents come to school events. She is of east African descent, speaks Somali at home, and speaks English and Somali with siblings. She prefers English at school. Naima has attended the same school since kindergarten, and attended preschool in district. Her overall 2016 WIDA ACCESS score was 3.2, placing her as a developing language learner. She enjoys reading and writing in English. Developing in her writing, spelling is difficult and frustrating for her at times, but uses all resources available and likes to be independent. She is a very confident reader and has grown significantly in her reading ability this year. Naima learns Arabic in "Dugsi" religious school on the weekends. She is a very articulate speaker, and likes to use a variety of vocabulary to show her learning.

Jose
Jose is quiet, curious, and eager to please. He likes to share about his home life and activities. He asks questions about others, and is very caring. He is interested in cars, movies, and cartoons. He is very friendly with other students. He has an older sibling in the school, and parents are involved. He speaks Spanish at home and speaks English and Spanish with siblings. He prefers English at school and in most situations. Sometimes he pretends that he "doesn't know" Spanish. His overall 2016 WIDA ACCESS score was 2.8, placing him as a developing language learner. Jose has attended same school since kindergarten and enjoys reading and writing in English. Has grown significantly in his attention to detail while writing this year. He is developing in his spelling and utilizing resources around him. Jose is developing in his oral skills, able to express himself most of the time with clarity. When speaking, he occasionally needs to slow down, and often needs teacher support for more specific, academic conversations.

Mariana
Mariana is outgoing in smaller groups, sensitive to others, confident and humorous. She likes to share and socialize with others. She is a very persistent student. She likes playing with her younger sister, jewelry, and helping others. She has a sibling in school, and parents are involved in school activities. She speaks Spanish at home, speaks English and Spanish with siblings. She prefers English at school and in most

situations. Mariana has attended the same school since preschool. She enjoys reading and writing in English. Her overall 2016 WIDA ACCESS score was 3.1, placing her as a developing language learner. We are working on independence while reading and writing. She can get visibly frustrated when she is challenged by a text or writing. Mariana likes to "perfect" her writing and school projects, and is very careful with her work. She is developing in her oral skills, and needs the most support in academic contexts. On occasions, she asks to explain herself in Spanish. She seems to get frustrated most when she cannot articulate specific words or phrases.

Preparing for the Intervention

Before beginning my lesson planning and data collection, I needed to obtain permission from the University of Minnesota Institutional Review Board (IRB), and my school district's research department. An application for exemption for reasons of educational research in my own setting was sent to the IRB (see Appendix D for approval verification), and was granted in late summer 2017. In following the protocol for engaging in research at my school district, I completed an abbreviated research proposal outlining my plans for action research. The school district approved my proposal in late summer 2017 After receiving approval on my IRB application, administrator approval, and MPS proposal and consent forms, I subsequently focused on obtaining permission from parents for my study. As my students are multilingual, as well as their parents, I utilized parent-teacher conferences with trained interpreters (Somali and Spanish) to obtain permission via consent forms in October 2016. I spoke to the Spanish speaking parents myself, with an interpreter present per school conference policy. All parents were given contact information and the opportunity to ask questions, and consequently gave oral and written permission for their child to participate. These parents had already had several interactions with me and were familiar with my role in the school, and therefore knew where to reach me or my administrator with any concerns or questions in the future.

After final approval, and meeting with my thesis committee, I proceeded to plan the intervention.

I spent time in December 2016 gathering materials and establishing a plan for the intervention. Referring to my literature review and recommendations of my research proposal committee, I planned a seven-week intervention schedule that included pre-assessment, making inferences from pictures, shared reading mini-lessons, and modified guided reading lesson plans (Avalos et al., 2007). For each research question, I collected several types of data, including audio and transcriptions of our lessons, teacher materials, student work and kept field notes and a daily reflective journal. Data were collected over the course of two months during daily 20 to 30 minute lessons, four to five days a week.

Implementation of the Intervention

In January 2017, I started the intervention. It lasted about eight school weeks, with breaks and the common interruptions to our schedule. I audio-recorded our lessons and assessments each day using a computer application, Audacity. I transcribed notable interactions on a daily and weekly basis, based on field notes, reflections and my own reviewing of the recordings. In general, my transcriptions included much of our time together, specifically our conversations surrounding pictures, texts and reading activities. Other sources of data included a daily reflection journal and artifacts, which I further triangulated in analysis to verify my observations and themes.

I used the first week to complete one-on-one assessments of each student's guided reading level and inference skill, utilizing the Fountas and Pinnell scoring system, and an additional teacher-made rubric (see Appendix A) for inference-generation. Starting the second week, I met with the group for about 25 minutes each day, and we spent four days

focusing on defining inference, and making inferences using pictures. We focused on one picture, of a familiar situation or concept, talked about what we noticed, I questioned the students, used think-alouds, utilized a graphic organizer, and we practiced making inferences. Students also practiced independently or with a partner after group practice, and used a graphic organizer to show their inferences in writing. After practicing with pictures, we began a modified guided reading routine, which was already established in my room. Modified guided reading entails spending more time on a chosen book, previewing content and theme together, focusing on particular vocabulary, word work, language forms and functions and reading the book two or three times, one time is shared and another independently. Typically, we spent three to five days on any book, spending an entire day building background, previewing and working on vocabulary. Then, days two and three included shared reading, in which I modeled think-alouds, we made inferences together, and practiced strategies. Finally, days four and five were spent independent reading, post-questioning, and a written response. We read three books over the course of the intervention, two fiction, and one non-fiction.

Lessons and assessments. The intervention process involved a planned sequence of assessments and lessons, constructed as a result of student ability, teacher experience and literature. Below is a general calendar of our lessons throughout the intervention, and subsequently, a more detailed narrative of my instructional plan. As stated, I used a modified guided reading plan, therefore our routines were similar and familiar to students on a day-to-day basis.

Table 4: Intervention January/February 2017

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Week 1	**January** 2 *No intervention*	3 F&P-pre-assessment	4 F&P-pre-assessment	5 F&P-pre-assessment	6 F&P-pre-assessment
Week 2	9 Introduce Inference Picture Inference Activities with graphic organizer	10 Picture Inference Activities with graphic organizer-whole group/pairs	11 Picture Inference Activities with graphic organizer--whole group/pairs	12 Picture Inference Activities with graphic organizer--whole group/pairs	13 Shared reading mini-lesson
Week 3	16 MLK Day	17 Shared reading mini-lesson	18 Shared reading mini-lesson	19 *No intervention*	20 **Book 1** Vocabulary preview, Building background
Week 4	23 **Book 1** Vocabulary review Shared reading, discussion	24 **Book 1** Shared reading, discussion	25 **Book 1** Shared reading, discussion	26 **Book 1** Read-to-self discussion respond by writing	27 *No intervention*
Week 5	30 *No intervention*	31 *No intervention*	**February** 1 **Book 2** Vocabulary preview, Building background	2 **Book 2** Shared reading, discussion	3 **Book 2** Shared reading, discussion
Week 6	6 **Book 2** Shared reading, discussion	7 **Book 2** Read-to-self discussion respond by writing	8 **Book 3** Vocabulary preview, Building background	9 **Book 3** Vocabulary work	10 **Book 3** Shared reading, discussion
Week 7	13 **Book 3** Shared reading, discussion	14 *No intervention*	15 **Book 3** Shared reading, discussion	16 **Book 3** Read-to-self discussion	17 *No intervention*

Week 8	20 *No intervention*	21 post-assessment	22 post-assessment	23 post-assessment	24 post-assessment

I recognize that standardized measurements and benchmark assessments may not showcase the many skills of my readers, and believe that although leveled reading can help students, it may also limit them to certain reading choices and contribute to a deficit-view of emergent multilinguals. However, leveled reading assessment does provide formative data that helps students and I choose appropriate books for instruction and independent reading. The pre-assessment, a Fountas and Pinnell benchmark system is completed three times a year, Fall, Winter and Spring. This assessment measures, fluency, accuracy, and comprehension. I decided to use this assessment, and make a supplement rubric, (see Appendix A), as a result of our assessment schedule, and it being the only common system we use to measure reading level and comprehension throughout the year. Student guided reading and independent levels, according to the Fountas and Pinnell system, are on a continuum of letters A to Z, with corresponding skills and behaviors. Students in second grade are expected to start the school year at about a level "J" and finish the school year at about an "M." We distinguish student reading levels as either "instructional" or "independent," meaning that instructional is the level in which students can read with support, and independent is the level in which students can read independently and comprehend without much support. In forming this reading group, I considered WIDA ACCESS scores, Fall Fountas and Pinnell benchmark scores and my own observations and assessment. Most of the students began the year as an independent "E" or "F", and by the assessment for the intervention were at an independent "G" or and

we read together at an instructional level "H." Common descriptors of level "H" reading materials and skills include multiple genres of texts, familiar and new content, complex spelling patterns and letter-sound relationships, complex sentences, ability to read texts silently, higher-level thinking skills and structures such as prediction and compare and contrast, and dialogue (Fountas & Pinnell, 2017). Skills we had worked on up until the intervention, and continued to review, were monitoring comprehension, checking understanding, asking questions, main ideas and details, problems and solution, compare and contrast, sequencing events, as well as word work on vowels, digraphs, plurals and past tense "-ed."

I chose materials purposefully, accounting for student experiences, interests, cultural relevancy, curriculum and proficiencies. An underlying challenge was finding appropriate literature that would facilitate inference making with my specific language learners, pointing to a need for high-quality literature for multilingual and multicultural students. I collected all student work, copies of books and transcribed the sessions daily, including all conversations that were relevant to our reading and inference-making and data that provided any other background for student learning.

Pre-Assessment. I spent a week on pre-assessments, one-on-one with each student, using the the Fountas and Pinnell (F&P) leveled benchmark system and an additional teacher-made rubric, focused on specific inference questions and skills. I wanted to see how my students were progressing in reading at mid-year, and observe any initial or notable inference skills to help me plan my intervention. According to the F&P protocol, I provided a brief introduction to the book, introduce characters and we would read one or two books at their level. I changed the book if it seemed too difficult or easy.

I listened to the students read books, and then made notes according to the protocol, comprehension questions and my own rubric (see Appendix A). The F&P assessment has a specific protocol and list of questions for each book and I followed these, as this was also an assessment to be used by my colleagues and for communication with parents. Outside of the F&P protocol, I questioned the students about their knowledge and experience with the topic of the assessment books, in which the main topics were sleepovers with friends and getting a new pet cat. I found that these concepts did not necessarily align with my students' experiences and cultural values, and did not use that data to make any definitive statements or conclusions about my students' reading and comprehension, further meriting further discussion and research on culturally relevant and engaging leveled reading.

Making inferences with pictures. I made the decision to use images as a precursor to making inferences with text for a few reasons, I wanted to learn more about how my students expressed their inferences, without the barrier of challenging texts, and to use the support of familiar contexts, research by Kendeou and colleagues indicates that young students can make inferences across media (Kendeou et al., 2008) and pictures would allow us to explicitly practice the skill with confidence and perhaps more easily recognize when we were making an inference. I began the intervention by walking into the classroom with a grocery bag, I asked the students where they thought I went and what was in the bag and asked them to explain their reasoning. Subsequently, I explained to students that we made inferences about my experience of going to the grocery store, and explained inference as a conclusion or a guess that needed evidence (a common term in my classroom and second grade discourse) and/or your own experience or prior

knowledge (a concept that had to be repeatedly explained and modeled). For the first few days, we discussed images and made inferences in oral conversation, I would question students and model inferences, and students would participate in whole group and partner conversations. I planned that pictures would serve as a prerequisite to making inferences in text, hoping to observe how my students made inferences without any textual barriers and what potential challenges arose when making inferences. These pictures were representative of (assumed) common experiences and knowledge of my students. Typical conversation involved questioning and answering with modeled support, think-alouds, graphic organizers and sentence frames from the teacher. We initially talked about vocabulary and identify objects, people and setting in the picture and move towards inference after I modeled inferences myself and used a graphic organizer to show my thinking. Implementing a gradual release and more time for student conversation, we first shared together and worked on whole group practice, then, students worked and discussed pictures in pairs. I also incorporated writing responses by pair and individual practice with graphic organizers, which will be discussed in my analysis.

Guided reading lessons and materials. I met with my group almost every day, and I followed a modified guided reading plan with three books, and spent significant time on vocabulary, building background, shared and independent reading and discussion. This allowed me to address word-level and vocabulary skills in order to focus on meaning, and to understand student challenges with reading and inference, and identify other skills we may have needed to include as mini lessons. I generally facilitated conversations, but also engaged student responses and ideas. When planning my lessons, I developed initial questions and prompts for inference and checking understanding for

during reading and after reading. As the teacher, I instinctively modified activities and questions and provide follow-up as needed for understanding. The books I chose were entitled, *The Gecko that Came to School, Brother Messy, Brother Neat,* and *Ships and Boats*. These books were chosen from materials available to our school (Fountas and Pinnell collections and Reading A-Z) and reflective of student instructional reading levels and prior experiences, knowledges and interests. The content and analysis of books will be discussed in more depth in my analysis.

Language and literacy taxonomy. To provide a more descriptive depiction of the books in correlation with the skills and language proficiencies of my students and frame points of potential analysis, I developed a taxonomical rubric based upon and developmental skills of language and literacy (see Appendix B). I created the taxonomy using the *Continuum of Literacy* (Fountas & Pinnell, 2017) and pedagogical and theoretical considerations of thematic and content language. The categories and scales, content language, familiarity of content and theme, complexity of storyline, word complexity, supportive illustrations and photos, and sentence complexity, helped to provide a holistic and descriptive evaluation of the books, though I still recognized that individual students' interactions and success with the texts depend on a variety of social and cultural factors that should not be limited to this taxonomy. All intervention books were at a level "H," and they were relatively similar in length and use of high-frequency words, but differed in use of content language, genre and topics. I rated the books based on this taxonomy to assist in my analysis in supporting evidence or challenges with the textual and linguistic characteristics of the book. Finally, as an "action-researcher," I positioned my role first as teacher, keeping in mind the social emotional and

developmental needs of my students, and facilitated activities in response to the needs of my students, and the happenings of the day. I modified my plans, reexamined texts and materials, and addressed student concerns throughout in order to better serve my students. There were a few days in which half of my group was absent, or I needed to attend to an emotional need of a student, and I subsequently moved part of the plan until the next day.

Guided reading lesson materials. The following paragraphs describe the specific books I used with my students.

Book 1: The Gecko that Came to School. After discussing pictures and participating in two shared reading mini-lessons with shorter texts, I returned to our typical guided reading routine with the group, which included building topic background, previewing the vocabulary and contents of the book, shared reading the book together with teacher-led questioning and discussion, and individual reading of the book with whole group after-reading discussion and occasional writing responses. Our first book, *The Gecko that Came to School*, was about a girl, Annie, who brought her pet Gecko to school, and described how the pet caused trouble through several funny events. This book came from a leveled reading collection at our school. We spent about five days on the text, and I supported students before reading by previewing vocabulary, making predictions, and discussing their personal experiences with animals. The concept of bringing a pet to school might have been unfamiliar, but the book utilized familiar school vocabulary and engaged my students because of the humor. The book provided many supports and structures for the young readers. Using my taxonomy of language and literacy for a base analysis and description of the book (see Appendix A for sample), the book resembled most of the characteristics for emergent-level texts. The content language

and topic were familiar to students, as the story used school and social language. The storyline was sequential, and pictures supported the text. Sentences contained an average of 5-7 words, and words contained some complex letter-sound relationships.

Book 2: Brother Messy, Brother Neat. Our second book, *Brother Messy, Brother Neat* was about two brothers who have a new baby sister and must learn how to share a room, despite their very different personalities. The students enjoyed this book and related to the topic because most of them share rooms and have a few siblings. Based on the language and literacy taxonomy, the book was similar to *The Gecko that Came to School* in that it was a realistic fiction book, had familiar content and vocabulary, and included characteristics of emergent reading books.

Book 3: Ships and Boats. Our third book was non-fiction, a departure from our focus on realistic fiction. The book compared and contrasted ships and boats. My students were interested in and familiar with different types of transportation, and the book referenced a few important concepts from our previous science unit. Using the language and literacy taxonomy, the book had a higher level of content vocabulary, requiring students to know or learn words such as paddle, oar, coast, and sail. I spent more time, two 25-minute lessons, on vocabulary and building background for this book in comparison to the others. We made two concept webs, named characteristics of boats and ships, and talked about similarities and differences, prior to working on vocabulary graphic organizers (see figure 3). The topic required some knowledge or experience with boats, but transportation is a common theme in primary grades and, therefore, my students shared that they had learned about boats or ships in some capacity previously. According to my taxonomy, sentences and words in the text were somewhat complex, with many words in each

sentence and more difficult letter-sound relationships. Because this book was non-fiction and included very specific content vocabulary, I found that inferences were difficult to make, and students required much more background knowledge and previewing of the book.

Post-Assessment. The final part of the intervention included the post-assessment, which was recorded and transcribed, supplemented with a rubric and my own anecdotes. It followed an F&P protocol, but I chose a book that was leveled at the instructional level we had been reading as a whole group, entitled *New Rules*, about friends who need to make rules to play hide-and-seek (a familiar game for my students). The goal of the assessment was not necessarily aimed towards improvement of reading skill or obtaining a measurement on making inferences, but rather to explore any changes or observations on individual students in regards to their inference-making processes. As usual, I provided a summary, character names, and pointed out any important vocabulary. The students read one-on-one with me and I recorded their fluency, errors and comprehension, and supplemented with my inference rubric. I developed questions to discuss post reading, and asked explicit questions in which the students would have to attempt an inference. The post-assessment allowed me to "check-in" with the students, and did not result in any significant or generalizable data in regards to a measurable improvement in inference ability.

Data Analysis

As action research lends itself to a variety of data collection and analysis methods, I chose to apply qualitative, thematic analysis throughout my study, exploring the discourses, behaviors, actions and dialogues that took place in my classroom. Much like

the process of action research, qualitative data analysis is open-ended and leaves space for discovery and modification of themes. Bryman and Burgess (2002) describe qualitative analysis as "essentially about detection, and the tasks of defining, categorizing, theorizing, explaining, exploring and mapping are fundamental to the analyst's role" (p.176). In choosing thematic analysis, I utilized Vaismoradi, Jacqueline Jones, Hannele Turunen and Snelgrove's (2016) characterization of a theme as "attribute, descriptor, element, and concept" (p. 101) that repeatedly occurs, and further helps organize and describe ideas with reference to the research questions.

Thematic coding. Though I had general hypotheses and codes before beginning my study, based on theory, literature review and my own assumptions about my students, I welcomed the creation of new codes and themes throughout the collection and analysis process. As I interacted with my data, I accepted that themes and coding process would arise as a result "both logical and intuitive" reflection (Bryman and Burgess, 2002). I utilized a process of qualitative thematic analysis, meaning tags or codes were initially created throughout collection and added to or modified as I transcribed and looked over documents, and finalized as I formally analyzed data.

As my research questions concentrated on student and teacher behaviors, actions and dialogue, my themes and codes reflected my inquiries. I used my teacher reflection journal and artifacts to verify and triangulate my conclusions. I followed a similar qualitative content analysis outlined by Schreier (2014) which included: 1. building a coding frame (creating tags, themes or codes), 2. segmentation (breaking up the data into relevant parts), 3. trial coding 4. evaluating and modifying the coding frame and 5. main

analysis (p. 7). Formal analysis followed the intervention, but I concurrently analyzed data as it happened or was produced in my classroom.

Coding process. Generally, I transcribed classroom events within a few days to a week of occurrence and used my journal, field notes and artifacts to help me focus on relevant pieces of data, gathering preliminary themes of teacher and student actions and dialogues. After the intervention finished and I developed a list of initial codes and themes, I began a more formal analysis and organization of my data. First, I did a "wash-through" of my transcriptions by hand, making notes of additional themes and notable occurrences. Second, I wrote brief memos of events and lessons using transcriptions, listing initial themes and supporting dialogues or actions. Next, I segmented the transcriptions into categories by activity and created groups of transcriptions for coding and analysis. Transcriptions were grouped and categorized by the following activities: pre-assessments, picture inference activities, each guided reading book, and post-assessments. Then, I moved to a more formal analysis, finalizing my list of codes, and importing documents into an online open source qualitative coding application, CATMA (CATMA). This coding application allowed me to import my list of themes and codes (see screen shot below, figure 1), manually select and highlight pieces of transcriptions and assign a code, and then group pieces of the transcriptions by code for further analysis.

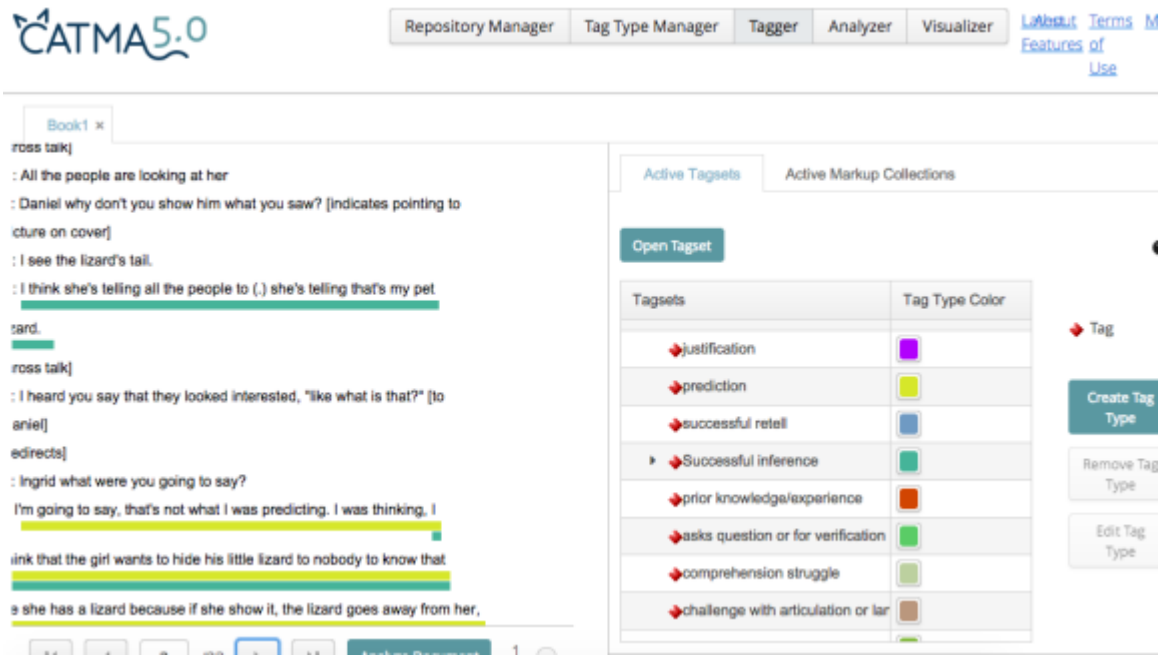

Figure 1. CATMA coding software

Description of codes. In my thematic analysis, I focused mostly on student behaviors and interactions. Although teacher interactions and behaviors were important, most of my coding process was dedicated to interpreting the students' discourses. Table 5 shows a list of codes for teacher and student behaviors and dialogue in transcriptions.

Table 5: CATMA Codes

Teacher	Student
reference to skill	justification
explicit reference to making inferences	prediction
builds background	successful retell
think aloud	successful inference
explicit questioning	prior knowledge/experience
asks for justification	asks question or for verification
uses visual or graphic organizer for support	comprehension struggle
	challenge with articulation or language
	challenge with justification
	notable student action or response
	illogical inference
	repeats or agrees with other student
	challenge with retell
	refers to text or picture
	evidence

The coding process also allowed me to create more complex codes, such as "successful inference + justification," meaning that pieces of transcription could be coded under multiple tags. During the analysis process, several codes became more prevalent and relevant than others, and I used the tags "successful inference," "illogical inference," "justification," "prior knowledge" and "evidence" most often, as my research questions focused on inference-making by students. I would also like to clarify and share my definitions of those tags. I considered a "successful inference" to be an inference (a

statement reasoned from evidence or prior experience) that made sense according to the text or image and was articulated clearly. “Illogical inferences” were inferences that were unclear or reasoned with irrelevant or non-contextual information. I used the tag “justification” when students articulated their inference with a “because” clause after the inference, stating their reasoning. “Prior knowledge” and “evidence” were tagged when my students clearly stated a prior experience or connection, and/or used direct evidence from the picture or text, usually communicated via statements such as “I see,” “I know,” and “I notice,”

After coding all of the relevant transcriptions and grouping statements and actions, I was able to analyze and make initial conclusions about particular activities and instances. My conclusions about the codes are preliminary and could be further analyzed from several angles, realizing that a variety of factors come into place when emergent multilingual students read, interpret and articulate their comprehension. These codes should be recognized as observable behaviors and dialogues, subjective to the context in the classroom and my experiences with students, further acknowledging that I did not have a complete or internal view of my students’ thought processes.

My analysis focused on a describing the observable “how” of making inferences, rather than measuring or quantifying improvement of inferences or literacy skills. Student discourses allowed for descriptive insights into their inference-making and literacy behaviors and interactions, which in turn provided the context and argument for further classroom research that includes a sociocultural framework, which was not initially designed for this study. In the next chapter, I will describe my findings and conclusions according to the research questions.

CHAPTER 4

FINDINGS

In this section, I discuss findings related to the following research questions "How can I scaffold instruction to support inference-making during guided reading in my classroom?" and "What student actions and dialogues take place when my students attempt to make inferences from text and images?" To gather this data, as mentioned in my methodology, my intervention included several components, completed a pre-assessment, with each individual child to gage their reading level and check-in with their inference skills, I facilitated inference with pictures and group discussion, and engaged in guided reading with a focus on inference-making. In my presentation of findings, I share themes and frequent occurrences, and elucidate them with samples from transcripts of lessons and discussions with students. Findings were derived from the transcriptions of our classroom discussions, and through my notes, journals and artifacts. I will acknowledge that assessments, pictures and books used during the intervention presuppose contextual knowledge of the students to an extent and, therefore, my findings are not broad generalizations of the inference process with multilinguals, but rather significant observations and themes within classroom discourses. I share my findings according to research questions, with a specific focus on research question number two, that presents data from the discourses demonstrated in my classroom.

Research Question 1: How can I scaffold instruction to support inference-making during guided reading in my classroom?

My students generally needed support to make inferences, whether it was through modeling, explicit instruction, questioning or visuals, which aligned with prior research,

and typical scaffolds for emergent multilinguals. I highlight a few significant instances in which the scaffolding extends learning or discourse, following sociocultural and Vygotskian theory in that appropriate scaffolds and human interaction support learning. Evidence was demonstrated through my pre-assessment, making inferences with pictures and guided reading sessions, with the given that each source was a separate instructional opportunity, with distinct and contextual content.

Explicit questioning. Pre-assessments, in early January 2017, showed that my students needed explicit questioning in order to share their comprehension and, in particular, their inferences. During the pre-assessment, I would go off script to provide vocabulary support, context, or rephrase questions when appropriate, but I did not extend my thinking or ask questions, provide supports while reading, or share hints for comprehension. At the end of each book, I asked a list of prescribed questions, including a few questions for making inferences, such as "How did (character) feel when…?" My students made simple inferences about events in the story and the feelings of characters, that made sense given the questions they were asked which surrounded local events, feelings, and relatively simple cause and effect questions. The responses included simple statements such as "He feels sad." or "Happy." Generally, the explicit questioning happened when I needed an extended response, or clarification, and varied among the students.

The dialogue below (see transcription conventions in Appendix C), between Naima and me, shows the "back-and-forth," of our interaction, and her need for explicit questioning to provide a justification. She was usually a very talkative student and loved

to share, but she required teacher elicitation to answer many of the questions in the pre-assessment.

Excerpt 1: Pre-assessment with Naima, 1/5/2017

1	T: How did Spencer feel when he couldn't find a cat?
2	N: Sad.
3	T: Why?
4	N: Because he wants a cat.
5	T: Why do you think the little cat was the best cat for Spencer?
6	N: Because, it, the cat, ran up to Spencer.
7	T: How did Spencer feel at the end? How do you know?
8	N: Happy
9	T: How do you know?
10	N: Because he hugged the cat.

Additionally, I found that that I needed to question my students, seemingly as a result of inconsistent student engagement with the task at hand or willingness to share, especially with my "quieter" students. An example of a "quieter student" is Ahmed. Although he was more proficient in oral skills in English than my other students- in that he could express himself with much clarity and coherence most of the time with a variety of topics and contexts- he needed me to engage in extensive questioning, most of the time. The following dialogue, excerpt 2, exemplifies a typical example of one of the many exchanges of questioning and answering between Ahmed and me, specifically when I needed him to justify his response.

Excerpt 2: Pre-assessment with Ahmed, 1/3/2017

1	T: How did Mugsy get in Jim's bag?
2	A: Because his mom put it inside.
3	T: Why do you think his mom did that?
4	A: Because, she wanted (.) He liked Mugsy, so she put it inside his backpack.
5	T: How did Jim feel at the end of the story?
6	A: Happy.
7	T: He felt happy. Why was he happy?
8	A: Because he found Mugsy in his backpack.

Explicit questioning was also evident throughout the intervention with texts, as well. I needed to support students more when there were challenges with vocabulary, or they were struggling with comprehension and making inferences. Below, in excerpt 3, we discuss our second book during the intervention, *Brother Messy, Brother Neat,* about two brothers who share a room after their little sister is born and do not get along.

Excerpt 3: Explicit Questioning with Book 2, 2/2/2017

1	T: How do you think-We're going to make an inference here, because I see in the picture, I see these boys, I think they are feeling something. How do you think they are feeling about sharing a room? I think. [students raise hands]
2	T: How do you think they feel about sharing a room? Mariana?
3	M: I think they feel worried, and they feel kind of mad.
4	T: Why?
5	M: Because they don't want to share a room, because their baby sister, she can take everything and put in her mouth. She can break, she can rip Nico's books, and Pablo's toys and crayons.
6	T: How do you know they feel worried though, Mariana? Do you have evidence on the page or your own experience? [inaudible, cross talk]
7	M: They, do not want to share(.) What it calls?
8	T: A room?
9	M: A room.
10	T: What do you think? José, how did they feel about sharing a room?
11	J: Worried, and mad because maybe brother neat, likes his neat room, and brother messy likes messy stuff. They don't want to share because brother messy is going to mess all his room and the baby too.
12	T: I agree. I think you're saying they are different and they like their rooms differently.
13	J: Yeah
14	T: So, Naima, how do you think they feel about sharing their room?
15	N: They feel mad because if the new sister she shares a room with her brothers, she will mess everything up. [inaudible]
16	T: Do you know that from your own experience from having a baby brother or sister?
17	N: No, I don't have a baby brother or sister, I'm the baby.
18	T: What do you think Ahmed? How do you think they feel about sharing a room?
19	A: Because
20	T: I think.
21	A: I think they don't want to share a room because...
22	T: //Pablo//
23	A: //Pablo// will mess, he's going to mess all the toys in the room.

In the above excerpt, it is evident that students were not generating inferences without teacher support and questioning. I initially asked questions to facilitate an inference, such as in line 2 with Mariana. I extended and asked additional questions to obtain more information from the student, such as a justification like in line 4. Additionally, I asked Naima in line 16 if she had any experience with a baby brother and sister, which aligned with the questioning in other instances throughout the intervention in which I would ask about student experience and if they were using their own experience or evidence in the book. Students generally needed my support to justify their responses and provide further explanation, leading me to plan intentionally for modeling and practicing sentence starters, questioning, and giving an explanation and think-alouds of what justification sounded like as well.

Facilitating inference with pictures. We began the intervention by spending three days making inferences with pictures. We looked at about nine pictures over the course of the three days. During the routine, I asked questions, we discussed what we saw and made related inferences. This was planned as an explicit support to facilitate later inference making with text. This support also provided evidence towards challenging aspects of making inferences and how students used their prior knowledge in making inferences, which will be discussed in later sections. This section focuses on how using pictures potentially enabled my students to make inferences with more ease.

I found that making inferences with pictures was less of a challenge for my students than making inferences while reading. In line with sociocultural theory and Vygotsky's "Zone of Proximal Development" (Vygotsky, 1976), I chose pictures with familiar situations and concepts so that I could focus on the skill of inference rather than

overcoming language challenges. Students were noticeably engaged in discussions with the pictures as evidenced by the excitement in their voices, frequent hand-raising, and interrupting their peers. I noticed that all my students had observations, predictions, and inferences almost immediately upon asking them a question. In analysis of my coded data, students made more inferences with pictures than texts, and with more ease, meaning that my students required less questioning and probing for justification.

At the beginning of a picture activity, we typically tried to simply identify objects or people in the pictures, but the students would make up a story, inference, or prediction almost immediately. I facilitated questions, modeled think-aloud sharing, and provided sentence starters. During this part of our lessons, I usually just asked each student to give a quick response, and I did not extend the question, or ask for further detail very often. The excerpts below illustrate examples of students making inferences with pictures without much teacher support. We were looking at a picture of two students sitting at a table coloring, and the other sitting on the floor, looking upset. My students, Mariana and Naima, raised their hands immediately and were not prompted with any vocabulary or additional questioning.

Excerpt 4: Making Inferences with Pictures, Naima and Mariana, 1/10/2017

1	T: [...] What do we see in the picture? I'm going to give everyone a turn. I want you to say "I see," "I notice." Mariana?
2	M: I notice that there are kids playing and I think so and I think so, the boys and one girl are did not want to play with the girl so the girl she is sad.
3	T: Thank you, what do you think Naima? I see. What do you see?
4	N: I see that the little girl is sad, is not playing (.) is not playing with the other people, because maybe they are being mean.

We can see in line 2 that Mariana made and inference almost immediately while looking at pictures, although I had simply asked "What do we see?" In line 4, Naima similarly

makes an inference with ease, guessing that the other kids were being mean to the sad girl in the picture. Two days later, we looked at a picture of a mom who looked tired (in excerpt 5), and her two sons were fighting over a toy in the background, I had just asked the students to tell me their observations and identify objects in the picture.

Excerpt 5: Making Inferences with Pictures, José and Mariana, 1/12/2017

1	T: The mom is thinking about something, ok what else do you see or notice, José?
2	J: Maybe, the mom has a headache, and the boys are making a lot of noise.
3	T: Maybe the mom has a headache? What do you think Mariana?
4	M: I think (.) that the mom hurt her head because, because, the boy and the girl playing because, one day my mom, her head was hurting because me and my sister, we was, we were fighting by toy.

In line 2, Jose infers immediately that the mom has a headache because the boys are loud. In Mariana's response in line 4, we notice that she goes beyond what she saw in the picture, but immediately made a logical inference using prior knowledge by justifying using "because, one day my mom…" and explaining a personal experience.

Explicit questioning and using pictures were not the only supports I used throughout the intervention, but were the most prominent in terms of generating quality inferences from students. These scaffolds supported extended student responses and seemingly an understanding of inference while practicing with pictures.

Research Question 2: What student actions and dialogues take place when my students attempt to make inferences from texts and images?

There were a variety of behaviors and interactions that took place while we were making inferences with pictures and texts. Triangulation from my journal and transcriptions showed that making inferences was very dependent on the content and

context, such as a familiar topic, or working with pictures versus a text. The below sections describe themes in relation to discourses in my classroom.

Student engagement and conversation. Our first book, *The Gecko that Came to School*, was about a girl, Annie, who brought her pet Gecko to school, and described how the pet caused trouble through several funny events. Although the concept of bringing a pet to school might have been unfamiliar, the book utilized familiar school vocabulary and engaged my students because of the humor. The book provided many supports and structures for the young readers as well, with clear pictures, sequential events and familiar school vocabulary. My students showed me they were very engaged with this book. They thought it was funny and enjoyed sharing their inferences and predictions. Most student inferences connected to characters' feelings, but students utilized visual clues and other experiences to hypothesize about events and conversations in the book's pictures. As I analyzed my transcriptions, student engagement with the book was evident in variety of ways. I noticed that when more student-to-student discussion occurred, students interrupted each other, used motions and gestures that indicated excitement, and students shared elaborate consequences relating to events in the story. Students who seemed excited about the story had immediate responses, and at times, more linguistically complex phrases and sentences as they hypothesized dialogue among characters. Below is an excerpt when students made predictions and inferences surrounding the story and the book cover. It shows my students interrupted each other, using visual evidence and provided lengthier responses.

Excerpt 6: Student Engagement, 1/20/2017

1	J: I know something
2	T: What do you think?
3	J: I think because the girl=
4	T: =On the cover.
5	J: =And the boy are seem like "What is that?" "What is she hiding?" And I see that the gecko right here because he like [pointing to picture].
6	T: Oh, you see the tail in the pocket (of the main character, Annie). [student cross talk]
7	N: All the people are looking at her.
8	T: José, why don't you show him what you saw? [indicates pointing to picture on cover]
9	A: I see the lizard's tail.
10	N: I think she's telling all the people to (.) she's telling that's my pet lizard. [cross talk]
11	T: I heard you say that they looked interested, like “What is that?" [to José] [T redirects a student]
12	T: Mariana, what were you going to say?
13	M: I'm going to say, that's not what I was predicting. I was thinking, I think that the girl wants to hide his little lizard to nobody to know that he she has a lizard because if she show it, the lizard goes away from her, and so the teacher sees it. So the teacher will say "we're going to have a phone call, away from her, and so the teacher sees it. So the teacher will say "we're going to have a phone call, we're going to call your mom and your dad because you have a lizard.”

Despite the linguistic challenges, students showed active involvement with the text. I found that students referred to evidence and attempted to explain their thinking by pointing pictures and making observations. Without much teacher elicitation, the students made inferences about the events in the picture. At line 5, José made an inference about the event and the conversation amongst the characters in the book, focused on the expressions of the characters in the picture, although he didn’t verbalize this explicitly. Naima also made a similar inference, and referred to students talking in the picture. Focusing on Mariana’s response above at line 13, her articulation was extended and enthusiastic about the topic evidenced in the length of her response, her tone and urgency to share her opinion, as noted in my field notes and transcription notes. She signaled her thinking with “I think,” and “I was thinking,” and expressed a different opinion than her peers by saying “that’s not what I was predicting.”

Student variations and peer interactions. I found that response length and frequency varied from student-to-student and that I could not fully account for original responses from students as a result of peer and teacher interactions. In alignment with sociocultural theory and research by Wells (2009), literacy and learning was also built between students, in addition to between students and myself, the teacher. At times, students' responses were dependent on responses of other students, and they would interrupt and act as peer supports to each other.

One of our conversations focused on the characteristics of bigger ships and smaller boats during our third book, a non-fiction text about ships and boats. In order to make inferences, students had to rely on their knowledge of transportation in the past, specific boat vocabulary, and understand the role of boats. In our group, Naima often took on the role of correcting and helping others. Although I was trying to guide the students in the below conversation, excerpt 7, when there was a misunderstanding, she intervenes and tries to mediate understanding with José and Ahmed.

Excerpt 7: Peer Interaction, 2/15/2017

1	T: I have a question, can anyone make an inference(.) about frame boats, and do you think they go faster or slower than small boats?
2	J: They go slow.
3	T: Why do you think a frame boat goes slower than a small boat?
4	J: I mean, it goes fast.
	[T redirects José to think about answer]
5	J: It is fast.
6	T: You think a frame boat goes fast? Why do you infer that?
7	J: Because there's like a wheel and a car thingy that you(.) I forgot what you?
8	T: =Motor?
9	J: Yeah it has it inside and there's like, then you paddle, then you turn it on, then they drive it.
10	T: [pointing to pictures in book] Do these boats have motors?
11	N: No.
12	A: But they do have wheels on them.
13	T: No those aren't wheels, but they do have paddles.
14	N: They don't.
15	A: I have wheels on my toy boat.

16 T: But look at this. [pointing to picture]
17 N: It's just the paddle, it doesn't go that fast!
18 T: So right here José, look at this picture, these are just oars, which are like paddles.
19 J: Oh I thought they were like motors.
20 T: Oh, okay.
21 J: Because if you put them down here.
22 N: =No there are people down here [pointing to picture].

Specifically, at line 7, José attempts to make an inference based on his knowledge of boats, but needs vocabulary support and a closer look at the picture to verify his inference. Although his inference did not fit with the context, he followed a logical progression, but needed more visual and lexical support, which Naima tried to provide at lines 17 and 22. Then, Naima made a logical inference, using the picture and her physical science knowledge. Ahmed, at line 15, tried to communicate his knowledge to justify inferences and contribute to the conversation as well.

With Ahmed, there were instances when I was unsure of whether his expression of ideas and inferences were entirely original. Ahmed, who is a quieter and caring student, tended to respond less frequently in group conversation. He often used phrases such as "I agree with (student)" or repeated others' ideas, perhaps recognizing inferences, but not able to produce them. This dependence and use of other peers as scaffolds corresponds to Vygotsky's (1976) theories of learning as a social construct, and demonstrates literacy as an interactive and peer-mediated event.

Prior knowledge. Making an inference often necessitates using prior knowledge or experience to make a conclusion. My students indicated prior knowledge more immediately and frequently with the images, without elicitation from me, in comparison to the texts, which at times required more explicit questioning. I modeled using my prior knowledge throughout the intervention using think-alouds.

The issue of prior knowledge first arose with the pre-assessment. As previously stated, the pre-assessment books were chosen from a benchmark assessment kit used within the school district. There were limited choices in what books we could use to assess the students, and hence, the topics and vocabulary were very specific to each book and did not offer me opportunities to choose books on topics with which students may be more successful. The books that were at my students' assessed levels involved going to a sleepover party with friends, and getting a new cat, respectively. Being familiar with the cultures and families of my students, I knew that these topics might be unfamiliar to them, so I provided background and we spent time discussing their prior experiences or knowledge about the topic beforehand. By building background, I found that Ahmed, Mariana and José were unfamiliar with the topic of their book, *The Sleepover,* a book about a young boy who goes to his first sleepover with friends and is worried about bringing his toy. The excerpts 8 and 9 below, in lines 1 through 14 with José and 1 through 10 with Mariana, demonstrate how I built background and discussed prior experiences with my students.

Excerpt 8: José Prior Knowledge 1, 1/6/2017

1	T: Have you been to a sleepover before?
2	J: [Nods no]
3	T: No? Has someone slept over at your house?
4	J: [Nods yes]
5	T: Yeah? Can you tell me a little about that?
6	J: I forgot.
7	T: It can be anything you remember. What do you think? So who slept over at your house?
8	J: My cousin.
9	T: Did you do anything with her?
10	J: I play with her.
11	T: You played with her. That's the topic of this book. [T reads introduction of book]
12	T: What are some things you need to take when you sleep over?
13	J: Pajamas, blanket, and stuffed animal?
14	T: Yeah.

Excerpt 9: Mariana Prior Knowledge 1, 1/4/2017

1	T: This is called the "Sleepover Party." Have you had a sleepover before?
2	M: No.
3	T: Have you been to someone's house for a sleepover?
5	M: Yeah with my dad and my mom.
6	T: With your dad and your mom. So do you usually have to bring things?
7	M: No.
8	T: Really? Do you have to bring your clothes or your toothbrush? Or your pajamas?
9	M: Yeah, and your pajamas.
10	T: Yeah you have to bring some stuff, so the book is called the "Sleepover party." It says "Jim was invited to a sleepover party. He was worried about staying at his friend's house and he wanted to take his favorite toy, Mugsy with him. Read to find out what happened."

In the book about sleepovers, I found that prior experience could have a potential effect on comprehension. The text necessitated an assumption that the students would know what to bring to a sleepover with friends, including a stuffed animal or toy, as well as understand the social norms of sleepovers. I asked one of the inferential questions from the book's assessment about the character choosing to bring his stuffed animal to the sleepover, and how that would be socially acceptable or not (i.e., Would the other kids laugh at him or bring their toys?). Prior to reading, Ahmed told me that he had not been to a sleepover and that he didn't have a stuffed animal; Mariana had expressed that she had not been to a sleepover with friends, either. The excerpts below outline the questioning that I led to help students make an inference about the character, Jim, bringing the stuffed animal, Mugsy, to the party and how that may be socially acceptable or not.

Excerpt 10: Mariana Prior Knowledge 2, 1/4/2017

1	T: [...] And why was Jim worried about taking Mugsy to the party?
2	M: Is because his friends, they might be, they might laugh at him.
3	T: Why do you think that?
4	M: Is because, I don't know.
	[T redirects students in small group in another part of room]

5 T: Can I repeat the question? Why do you think his friends might laugh at him?
6 M: Is because he has a teddy bear.
7 T: So you thought his friends might laugh at him //because...?//
8 M: //It's because of a baby toy.//

Below, in excerpt 11, Ahmed also struggled with this question, and I tried to help him connect by rephrasing in line 3, in which he responded to me by saying in line 6 that he did not have any stuffed animals. Eventually, he and Mariana went back to the book and found evidence, but initially both seemed to be confused about the question.

Excerpt 11: Ahmed Prior Knowledge, 1/3/2017

1 T: That's right. Why was Jim worried about taking Mugsy to the party? Why do you think?
2 A: (.) I don't know.
3 T: So think (.) think about if maybe you went to a sleepover party? Would you want to bring a stuffed animal?
4 A: Yeah
5 T: You would?
6 A: No (.) I don't have a stuffed animal, but I have toys.

In sum, the pre-assessment further shaped how I moved forward with the intervention. I took notes and reminded myself to think about my questioning, potential sentence stems, and how to modify or choose materials that would facilitate comprehension.

Moving forward with pictures, prior knowledge seemed to be expressed with more ease. An example of making inferences with pictures and with inclusion of prior knowledge occurred with Mariana. In the following excerpt 12, tells me that the girls are racing and justifies her response by using her prior experience with her sister in line 2.

Excerpt 12: Mariana Prior Knowledge 3, 1/11/2017

1 T: Mariana, what do you see?
2 M: I see the girls are making race and pushing themselves to win, because my sister that's

what we (.) when me make the race, and she won't let me win, so I push her (.) and so she (.) and so I win.

José also provided a logical inference that included prior knowledge, below in excerpt 13. He required some questioning by the teacher, but could articulate his inference clearly, as seen in lines 2 through 8 in excerpt 7, more specifically in line 8 when he justifies his inference with his prior experience of losing a toy in the couch cushions.

Excerpt 13: José Prior Knowledge 2, 1/10/2017

1	T: What is the man doing and how do you know? Your knowledge and your evidence.
2	J: The man is looking for like something, but (.) maybe he lost something.
3	T: [T recording on graphic organizer] How do you know José? What do you know from your head or what do you see?
4	J: I see because he is looking in the couch.
5	T: And has this ever happened to you before?
6	J: Yeah
7	T: Can you tell me more about that?
8	J: Because one day I had like a car toy, and I left it in the couch and it like sunk down and then it was like that thingy [points to cushion in picture] and then I put the thingys up and I like found it.

The examples of Mariana and Jose demonstrate their ability to express their prior knowledge coherently, without much elicitation from the teacher. However, when working with texts, students required more frequent elicitation of prior knowledge, by me asking similar questions to "How do you know that?" or "Do you have a connection to that?" Therefore, it was seemingly more difficult for them to connect, or articulate their connection, to their prior knowledge.

Lexical challenges and vocabulary. Challenges with inference-making at times seemed to result from challenges with finding the right word or vocabulary. Specifically, I would like to share my findings from Mariana, because I observed that she demonstrated the dynamic and contextual nature of making inferences, at times making

inferences that were logical and justified, while at other times exhibiting challenges with inferences most seemingly as a result of specific language and vocabulary. At times, when she was unable to make a logical inference, I noticed that it seemed to be a result of a lexical challenge, or her lack of knowledge of a specific word, which in turn required extensive questioning on my part.

In one conversation, she demonstrated success and challenge with making inferences within the same conversation. We discussed a picture of a mom with a headache while her two children fought over a toy. Mariana made an inference that was justified using prior experience. Mariana described that the mom's head hurt, and that once Mariana fought with her sister and her mom had a headache. However, later in the discussion, as shown in excerpt 14, she wanted to make another inference, and was not able to clearly articulate her thinking. A discursive note that I wrote in my journal and field notes a few times throughout the intervention and noticed in other contexts, pertained to Mariana. Her responses, especially when frustrated, included several pauses, denoted by the "(.)" below. She also has a stutter, which was left out of the transcriptions, unless repetition of words or phrases were essential to the meaning.

Excerpt 14: Mariana's Lexical Challenge 1, 1/12/2017

1	M: I think the mom feels (.) angry. (T redirects a student)
2	T: I think mom feels angry because?
3	M: She doesn't, I think so, I wanted to say another one (.) I think the mom feels wondering.
4	T: What does that mean?
5	M: Something like (.) she's like looking to over there and looking over there. [moves head to indicate looking around].
6	T: Why do you say that? (.) Because?
7	M: Because, she doesn't know what to do, with the kids.

I followed up with her response asking if she was thinking of the word "thinking" and she affirmed, which would have made more sense in the context.

Mariana demonstrated the variability and contextuality of making inferences again while working with texts. At times, she made very logical and coherent inferences, and at other times she struggled with a particular word or phrase that seemed to "unravel" the inference process. Below in excerpt 15, regarding book 2, Mariana explained in line 3 that the boys needed rules to set a good example for their little sister, but did not justify the inference using evidence or contextual information. She tried to articulate her thoughts, seemingly looking for a word in line 2, and perhaps as a result of a lexical breakdown, became frustrated.

Excerpt 15: Mariana's Lexical Challenge 2, 2/6/2017

1	T: Why do they need rules?
2	M: I think to not be organized, and to not be organized(.)To be(.) when their little (.) okay [shows frustration by sighing]
3	T: Do you want to take a minute and think? I think they need rules because?
4	M: I think they need rules because when their sister grows up she'll be organized.

Indicated by the pauses and sigh in line two, she was frustrated and could not express her thoughts. In line 4, after a chance to think, she made a linguistically coherent inference, but it did not make sense given the evidence and context of the story.

There were a few other points of observation regarding lexical challenges and vocabulary texts as well. Much of the time, I heard redundancy and repetition of words. For example, Naima once attempted an inference with the statement, "He is mad because he is frustrated," with redundancy in the justification. Additionally, the inferences

regarding character feelings included simple and repeated use of words such as sad, mad, and happy.

Inferences and predictions. My students frequently shared thinking, regardless of the task at hand, taking advantage of any opportunity to share and displaying behaviors typical of younger elementary students. I found there were times when I would ask for or facilitate an inference, but students responded with a prediction, and occasionally if I asked for a prediction, students responded with a local inference. Although predictions and inferences involve making "educated guesses" from evidence or prior knowledge, they are distinct from one another. A prediction serves to make a statement about future events and should be based on the text already ready. Predictions may or may not happen, and can be verified at the end. An inference in the context of reading is a statement or conclusion synthesized from reasoning, prior experience, and evidence, used to "fill-in" information from the text that (Kendeou, 2015, p. 161). All students demonstrated inferences as predictions and vice versa several times, but José and Mariana most often showed the tendency to make elaborated statements from an initial inference. Below, in excerpt 16, José and Mariana, both make an initial inference, then launch into elaborated predictions.

Excerpt 16: Inferences and Predictions, 1/26/2017

1	T: How did she (the main character, Annie) feel at the end?
2	M: I think she felt giggling and worried, because maybe the teacher is(.) maybe she should do(.) maybe she remember what Dave said, what Dave warn her, she should pay attention to David and the teacher, and so that's why she's worried.
3	T: Okay, so she's worried. Can you explain why she is worried? I heard you, but I'm just trying to make sense. So why would she be worried right now?
4	M: Because, right now she would be worried, because the teacher is going to call the principal and the principal is going to call her mom and her dad.
	[...]

5	J: Maybe she feels sad and she feels mad, and then, first she feels happy, then she feels giggly. First is happy because her friend didn't get hurt. And the teacher will get mad because she said no pets in is happy because her friend didn't get hurt. And the teacher will get mad because she said no pets in school and then she did bring it. Then she's sad because then she's got to walk her into the principal's room and then the principal is going to call her mom and dad, her parents. Then they are going give away the gecko, then she's going to feel sad.

In line 2, Mariana, made an inference, but used a prediction to justify and explain what would happen next, without using evidence from the "moment" or pictures in the story. In that moment, I was confused and there were a few linguistic challenges, so I explicitly asked her to focus on her justification of the character's feelings. In line 5, José's first inference about the character being happy is logical, and makes sense given the context. The prediction is logical as well, indicating a prior knowledge or idea of what could happen. His inference was separate from his prediction by articulating two different statements, and tenses, but we see that he quickly strayed from making an inference "in the moment" to making a prediction about the character's feelings about potential events.

Skills and multimodal expressions. I found that students used a variety of skills, resources, and modes, such as gestures, pointing, expressions, and oral language to express their knowledge and comprehension (Kress, 2009). The most frequent instances of expression were gestures, pointing to evidence in the book, peer interaction, and asking for verification from me. In the excerpt below, Naima, a naturally-expressive student, demonstrated her thinking by changing her voice and making sounds, pointing to evidence, and making a face about characters' feelings.

Excerpt 17: Multimodal Expression, Naima, 1/24/2017

1	T: My question is, use your evidence, use your brain. What do you think could happen, realistically, when the gecko leaves this room?
2	N: He could go in the cafeteria.
3	T: He could go in the cafeteria.
4	N: And the teacher says "[gasps] I see the gecko in the class!" [points to a picture in the book]
5	T: I love how you're making an inference about how the teacher is feeling right now. How do you think she's feeling?
6	M: Happy, sad.
7	N: =Excited.
8	J: =Jealous
9	T: What do you think Ahmed? How is she feeling?
10	A: I think she is feeling, //jealous.//
11	N: //Surprised!//
12	T: Jealous? What tells you she is feeling jealous? [long pause]
13	T: Does it look like she wants a gecko in her classroom?
14	Students: No
15	T: So jealous would mean that I want what you have.
16	N: =If she would be jealous she would be like [makes mad face].

We see that Naima uses multiple modes and resources to express her thinking. In line 3, Naima changed her voice, made a sound, and pointed to a picture to infer what the teacher might be saying on that page in the book, in which there was no text that talked about the teacher's feelings. Later, in line 16, as I tried to question a student on their inference, Naima immediately responded with a statement, and an expression to show what jealous means to the other students. Below in excerpt 18, after I asked a question, José responded and expressed himself in line 3, using hand motions and pointing to evidence.

Excerpt 18: Multimodal Expression, José, 1/20/2017

1	J: =And the boy are seem like "what is that?" "What is she hiding?" And I see that the gecko right here because he like [points to picture in book].
2	T: Oh, you see the tail in the pocket.
	[…]
3	J: [making hand motions and pointing in different directions] I think, maybe the gecko, maybe the kids will not see and the gecko just runs over here and comes out and then they chase him, and the teacher's like "A:h, that's a gecko."

In line 1, José used the picture to finish his thought, and I affirmed his thinking with my statement in line 2. Later in our conversation, line 3, José uses many gestures to add meaning to his inference of the dialogue happening in the picture.

After we read the book and discussed it, students worked in pairs to fill out an inference graphic organizer, (see student example in the illustrations, figure 4). This activity was successful in that students actively thought about their reading and made quality inferences, but it was difficult for them to articulate prior knowledge and was also highly scaffolded, as well as required writing, which, at times, elicited frustration from my students.

Metalinguistic and Metacognitive Awareness. Having an awareness of higher-order thinking and comprehension is developing in early elementary school for non-emergent multilinguals and emergent multilinguals alike. However, Mariana demonstrated, in a few distinct instances that she was somewhat aware of her thinking and what she was attempting to say. Mariana also made inferences that were challenging for other students. She was the only student who announced she was making an inference by saying “I think I have an inference!” during the study, despite being a student who experiences more challenges with expressing herself orally than the other students in the group. In the excerpt below, Mariana illustrated her awareness of making an inference. In

this part of the book, Nico had made a line down the middle of his room, and Pablo, his brother, laughed at him for doing that.

Excerpt 19: Metacognitive Awareness, Mariana, 2/6/2017

1	T: Why is Pablo laughing?
2	M: I think so because(.) Oh I think so. (.) //I think so I have an inference!//
3	T: //So Pablo is laughing...// You have an inference? Tell me, why is Pablo laughing?
4	M: I think so because Nico is going to, Nico made a mistake. And so Nico wants to go to the door and get something fast. And so, he can't go on his side.
5	T: And so, you're thinking?
6	M: =And so he is laughing because he can't go on his side. And he made a mistake.

Mariana signals that she wants to make an inference in line 2, and infers that Pablo is laughing because Nico made a mistake by making a line in the room. I found that Mariana was the only student to signal her inferences related to the book. Earlier, as evidenced in excerpt 6, line 13, she also told the other students that she had a different opinion by saying "I'm going to say, that's not what I was predicting. I was thinking…" Her expressions of making inferences and predictions were sophisticated for primary students.

Overall, I found that providing an environment that facilitated longer conversations about texts and pictures seemed to be the most important in order for students to successfully infer, aligning with sociocultural theory which asserts that learning is a social construct. In my discussion, implications, and conclusion that follow, I will theorize my findings and explore what they mean for practice and view of multilinguals, and then make suggestions based on a broader sociocultural view and approach to reading assessment and instruction.

CHAPTER 5

DISCUSSION AND CONCLUSION

My exploratory action-research study provided data that I discuss in this chapter. The study supports prior research on teacher scaffolds and the needs of emergent multilinguals. In the current study, I inquired about how to support young emergent multilinguals with inference-making in reading and analyzed the behaviors and discourses that emerged with young multilinguals as they tried to make inferences. I followed an action-research design in that I planned an intervention, instructed, reflected on instruction, and modified instruction throughout the intervention. Specifically, results from my study suggest that it is possible to support the inference making of emergent multilinguals at a variety of proficiency levels with appropriate scaffolds; it is also possible to support students in a way that recognizes and includes the varied skills, bodies of knowledge, and cultural and linguistic backgrounds of the students. The study also illustrates that success with inference and higher-order comprehension skills is dependent on several factors, and suggests a need for differentiated and scaffolded instruction that not only attends to the cognitive and academic needs of students, but also their sociocultural backgrounds. I do not attempt to make any generalizations about young emergent multilinguals and their comprehension processes outside of my context. Rather, throughout this thesis, I illustrate and analyze the variety of scaffolds and classroom interactions that took place during inference instruction within our group, and propose a need to explore this topic further.

When starting my inquiry and study, I had hypothesized concrete and measurable outcomes; but soon, as a result of pre-assessments and trying out strategies, I observed the contextual nature of inference-making in action. I realized that my action-research

study would have to be highly exploratory and based upon descriptive accounts, rather than measurable assessments. Initially, I wanted to demonstrate improvement of inferencing skills. I observed some improvement, but could not demonstrate the improvement using my rubric-based assessments. One reason for this is because the texts for assessment were different for the pre- and post-assessment (differentiated for reading level), and my findings showed inconsistency in inferencing behaviors. Instead, I observed that the ability to infer was dependent on a multitude of factors, such as concept knowledge, vocabulary knowledge, and student engagement. Furthermore, I observed many discussions and interactions that would not have been possible outside of a small group setting, and dependent on longer conversations with my students.

Research Question 1: How Can I Scaffold Instruction to Support Inference-Making During Guided Reading in my Classroom?

My first research question was answered first through my literature review and then verified through my planning and instruction. The students responded well to typical reading and language scaffolds, such as explicit questioning (e.g., Ankrum, Genest & Belcastro; Norris & Hoffman, 1990; Richards & Anderson, 2003; van den Broek, Kendeou, Lousberg & Visser, 2011), think-alouds (Kendeou & Van den Broek, 2005), graphic organizers, vocabulary instruction (e.g., August, 2005; Carlo et al., 2004; Helman & Dutro, 2009; Lieder, Proctor, Silverman & Harring, 2013; Wood & Robinson, 1983), frequent oral interaction and sentence stems. It was apparent that these scaffolds provided immediate help to students in their learning. This finding was not numerically measureable, but rather emerged through conversation, such as when I observed a student using a sentence stem appropriately or justifying an inference after teacher questioning.

The variety of supports I used provided multiple ways for students to access content and engage with texts. Specifically, I found that a modified approach in guided reading and working with pictures prior to reading text helped learners articulate and focus on the comprehension of key concepts.

Modified guided reading (Avalos, et al., 2007) was an effective approach to use with my learners all year, and specifically in collecting data for this study. This approach extends the typical guided reading routine in that it implements additional time, choosing appropriate and culturally relevant materials, as well as instruction on pertinent language forms and functions and vocabulary. Using this approach helped me to provide adequate time for previewing texts, vocabulary instruction, multiple readings of the texts, and discussion. Although my research questions did not specifically focus on evaluating the success of an approach to guided reading, the modified approach seemed most instructionally appropriate. Modified guided reading allotted for time to work on specific language forms and functions and vocabulary, and to ask questions and learn about my students' behaviors in relation to inference making, which may have not occurred had I only spent the typical one or two days with shorter texts. I observed that my emergent multilinguals could show their learning if given more time and support. This approach may not be appropriate for very simple texts without a variety of language features and storylines, however, with texts containing complex storylines or a significant amount of content information, the approach seemed to enhance student meaning making. The approach also supported group conversation, allowing for students to share and discuss texts extensively.

Research Question 2: What Student Actions and Dialogues Take Place When My Students Attempt to Make Inferences from Text and Images?

My second question, related to the behaviors and interactions of the students as they tried to make inferences, involved analysis of my journal, transcriptions, field notes and student texts. This question was the primary focus of my analysis and discussion. The several themes that arose supported various ways to enhance inference making with young multilinguals, including modified approaches to guided reading, explicit questioning, inclusion and recognition of prior knowledge, and use of culturally-relevant materials. Though my themes and findings are not novel, I believe the examples of student-teacher discourse demonstrate the importance of learning about our students and recognizing that individual differences in reading and comprehension come from a variety of factors. These factors include sociocultural experiences and access to helpful prior knowledge, implicating differentiated approaches to instruction and assessment.

Inference making with pictures. When my students made inferences with pictures, I noticed they were more enthusiastic and engaged, shared more of their prior knowledge related to the topic, and made inferences more automatically. I had predicted this would happen, and actually planned for it, so that we could practice without the potential barrier of texts. Kendeou et al. (2008) tested different media and found that children can successfully make inferences in non-textual context and eventually transfer that skill to texts, using many of the same cognitive processes used in inferencing. Pictures more easily facilitated making inferences, and students were notably more responsive and articulate with pictures. I intentionally chose pictures that I thought, based on my knowledge of the students, would resonate with their experiences and support their

language development. This aligns with research that demonstrates the value of intentionally choosing materials and content for learners (Brantmeier, Sullivan, & Strube, 2014).

When students, in particular, Mariana, struggled to make an inference with pictures, it seemed to be related to a lexical or vocabulary challenge. Mariana would get "stuck" on a word or two, and show inconsistency in making successful inferences. One minute she was successful and the next she had trouble articulating her inferences within the same conversation about a picture. Her inconsistency led me to believe it was a lexical issue, rather than comprehension of the situation in the picture, especially because we were speaking of one scene in a picture, and not required to refer to multiple events. In the lessons using pictures to make inference, my students shared more frequently, and I believe that the visuals, especially ones that made connections to students' experiences and knowledge, facilitated more conversation.

There were instances when vocabulary and lexical issues were apparent as a student struggled to make an inference, and there were instances when I was unsure of whether the expression of an idea or inference was truly emerged from the student. Because of this, I recognized how difficult it can be to assess comprehension with students and that some students have more tendencies to rely on the interactions and ideas of others. Finally, using pictures to teach about inferencing allowed us to focus on the process and name the skill, without the added difficulty of decoding text. This method could serve as a potential scaffold for young multilinguals and beginning step for a number of comprehension skills such as predicting, determining cause and effect, analyzing characters, and so on.

Multiple modes and strategic communication. Students exercised many of their capabilities and modes (not only discussion, but using gestures, facial expression, pointing and writing) as they explained their thinking and inferencing. This observation aligns with research that supports multimodal communication and language learners' negotiations of meaning, and evidence that claims that younger students spontaneously use multiple modes to convey meaning (National Council of Teachers of English). Students used gestures, pointing, facial expressions, and discussion to express their thoughts. Students also asked for verification, and utilized their peers' responses to help them communicate. When unable to communicate a specific thought or a word, these multiple modes became more prevalent as well, and students often utilized "strategic communication," such as word approximations, asking for verification, and saying "I don't know" (Dörnyei & Scott, 1997). At times students were unable to "find" the exact word they were looking for. José exemplified this throughout the study; he used multiple modes to communicate on a regular basis. José used pictures and motions to explain and make meaning, illustrating how multilinguals circumlocute using a variety of modes.

When my students engaged with multiple modes and used a variety of communication strategies, they were making it clear to me that they comprehended, but were unable to specifically articulate their comprehension verbally. As my students were emergent multilinguals, this was not a surprising finding. This study caused me to reflect more upon this, and hence illuminated the many ways my students could express themselves to me, showing how dynamic they could be during reading. When my students used a number of modes and strategies, it became apparent that there was a need for vocabulary and further discussion on the topic of focus. Regardless of being

challenged by the language demands of a book or conversation, however, students would join the conversation using these various modes and strategies, demonstrating their enthusiasm and strategic competence. Moving forward, exploration of multimodal communication could be studied further in terms of reading comprehension.

Explicit questioning. Most of the time, my students needed support to enhance their responses by receiving explicit questioning or being asked to justify their statement. I was not surprised by this finding, because research (Goldenberg, 2008) supports questioning with language learners, and monolinguals and emergent multilinguals at this age are still learning how to justify their statements and use evidence not only in reading, but in other subject areas as well. Explicit questioning supported my students to extend their responses, and allowed me to assess their understanding. Mariana demonstrated the positive effects of explicit questioning. As I asked her for verification and about her use of particular words, she was able to articulate her ideas more completely. In my reading group, because of the structure and time available, I could engage in deeper conversations with my students by questioning them. This finding highlights the need to provide opportunities and time for emergent multilinguals to use their own voices, which in turn, may provide support to engage in higher level thinking.

Prior knowledge. Prior knowledge is a necessary component for making an inference as well as many other higher order comprehension tasks (Snow, Burns & Griffin, 2008) and my study suggests the importance of building background, modeling prior knowledge, and allowing time for students to share their knowledge and experiences. This was first apparent to me during the pre-assessment, as I noted that the students had not been able to relate to the topics of the book. I found that students were

able to connect to the topics, with either background knowledge or experience, this by building background with vocabulary and topics, and asking questions prior to reading. My findings in the pre-assessment and working with pictures suggest the importance of reading materials that are culturally relevant for a variety of students, especially if the expectation is to demonstrate higher levels of comprehension and thinking (Brantmeier, Sullivan, & Strube, 2014). Students, when unable to relate to the topic, had noticeably shorter responses, and I had to question extensively throughout the activity. Using materials that are culturally relevant and linguistically accessible, not only lead to engagement and community, but may offer further opportunities to engage in higher order thinking. Without as many barriers, such as irrelevant topics, and difficult language, culturally-familiar materials at first may lead to potential transferability for later tasks with other content.

My students demonstrated their prior knowledge and inference abilities with more ease using pictures, which I chose intentionally to represent familiar situations. The students' more immediate and extended responses with pictures suggested that when contexts and activities are relevant and students have appropriate scaffolds, students may be able to engage in higher quality conversations, and perhaps gain more meaning from the activities and materials and also access more higher-order thinking. Through all of the books, my students use of prior knowledge required concentration and my supportive questioning, suggesting that it is helpful for educators to engage with students about their prior knowledge, and perhaps model using prior knowledge through think alouds. Learning about students' prior knowledge has implications to the materials teachers choose, especially when introducing a new skill, because students may have increased

understanding, and this may lead to transferability later when topics become more difficult.

Culturally relevant and high-quality materials. The pre-assessment I gave early on demonstrated the importance of using culturally relevant materials to assess and facilitate instruction, especially with more new or difficult skills. My students did not have tangible experience with some of the topics, and therefore provided shortened responses. At times, they had difficulty making inferences. Because inference making necessarily involves the use of prior knowledge and reasoning, students do better when they have accessible content from which to make inferences. To do this, teachers may need to use fiction texts that students can relate to and/or provide several pre-reading opportunities or questioning to learn about new content. As I reflect on my own planning, I recall that it was challenging to find high-quality leveled literature that would facilitate more natural conversations and inference-making that met the needs of my students. To take this issue to a broader policy level, funding in schools should be adequate to provide for a multitude of relevant, timely, and engaging materials that allow for comprehensibility if our expectation is that students engage in higher-order thinking skills while reading.

Implications

My results supported prior research on comprehension with emergent multilinguals because it highlighted the many supports that help emergent multilinguals as they engage with and understand texts. The study also illustrated that several factors, including prior knowledge, culturally relevant materials, the use of pictures, peer interaction, and teacher support influence inference-making, comprehension, and

students' articulation of their understanding. I was not able to isolate or explain singular or specific factors that inhibited individual students' comprehension; rather, I suggest a variety of factors that may influence teaching and learning. This highlights that educators and researchers should be aware of multiple factors, and use a variety of strategies to differentiate instruction to meet specific learner needs.

This study showed that my emergent multilingual students needed time and several opportunities to engage with skills, texts, and concepts. My observations suggest that a longer, modified guided reading approach, in which we spend multiple days on a text, is more productive than moving through materials quickly. Pedagogically, it may be helpful for teachers to use images at first to teach a more difficult comprehension skill, because it seems that students talked more and could focus on the skill without the challenges of text. Using pictures also gave me insight into whether language or comprehension was the cause of expression difficulties because decoding text was not a confounding factor. I found that emergent multilinguals who are learning how to make inferences with texts may need significant support in justifying their responses and articulating their thinking through explicit questioning. This finding aligns with prior research with L2 learners and reading (Goldenberg, 2008). Planning and providing teacher supports must be intentional through the inclusion building bridges to students' prior knowledge, and using background and culturally-relevant materials so that students have access to the content in the books to make inferences.

As a result of the multitude of factors involved in this study, and the lack of comparable pre- and post-measures, I would call for more qualitative and descriptive approaches to studying emergent multilinguals and higher order comprehension skills.

Specifically, in regards to inferencing, prior knowledge and concept familiarity play a large role in what students comprehend. This insight leads to the recommendation that instruction and assessments should be differentiated for learners, and based on their sociocultural practices. Large-scale quantitative studies that focus solely on cognitive processes and products of inference may not account for individual differences in experience, background, and skills.

Moving forward, I recommend that research focus on classroom strategies and practices that are inclusive of the diverse experiences of students and the many ways students show their learning. Additionally, studies should consider and focus specifically on how multilinguals' language and literacy learning is different from that of monolingual students. I found that under certain circumstances my students could infer with texts, with appropriate supports, illustrating that students with developing English proficiencies can engage with higher order tasks and skills. Furthermore, educators need the time and materials that allow students to showcase their knowledge in a variety of modes and through extended conversations about texts. The topic of inference and other higher order thinking skills still needs much more research, especially through qualitative lenses. In my future work, I hope to focus on discourse studies of young emergent multilinguals and the ways they express their abilities and literacies in the classroom, in hopes of finding more insight on how to support young learners in reading comprehension through an asset-based view of their literacies and cultural backgrounds.

Limitations

My study illustrated the many ways students engage in comprehension activities, through my scaffolded instruction and students' multimodal discourses. I made the

decision to audio-record my students to provide a less-distracting environment for them. I also recognized that this choice sacrificed some important visual data that could have been analyzed through a video recording. Another limitation was the lack of quality materials and texts I had to choose from. Though I would purchase books for my students from time-to-time, I was limited to my own leveled library, the school's small leveled library, and online printable books, and other resources provided by the school. I believe that many educators face this issue as well, and it highlights the need for increased school funding to be devoted to high quality reading materials for students.

Conclusion

Research has indicated that inferencing is essential for comprehension (Oakhill & Cain, 2007), and this assertion drove my focus on this specific meaning-making process. Prior literature on the topic of comprehension and inference has illustrated quantitative and cognitive approaches that focus on the product or statements of inference. But, research has not answered the question of how to support emergent multilinguals in inference making that takes into account the linguistic and cultural differences of multilinguals. There is clearly a need for more sociocultural, contextual, and descriptive investigations that could lead to stronger implications for teaching and learning. Hence, my decision to engage in research from a practitioner position and qualitative action-research paradigm provided me the opportunity to observe and transcribe rich descriptions of classroom practice, and spotlight specific students' challenges and experiences.

My action research illustrated the many ways that students make inferences and engage in expressing their understanding. Through conversations and activities using

modified approaches, I concluded that my learners were not simply inhibited by language difficulties, but also access to content and meaningful texts. Founded on Kendeou's prior work on inference, I took results from her studies and applied them to the design of my intervention. These included using pictures to facilitate inference as a preface to working with texts. This strategy engaged my students and opened more conversation. Though my results did not conclude that particular strategies worked better than others, my results did show that the inconsistencies of each individual student within their ability to infer at various points of an activity or text and across different activities, point to a need to focus on individual learner differences and prior knowledge while working on comprehension. My questioning and other data showed that my students comprehended the books, but needed significant support to do so. Nonetheless, my results provided evidence that students at developing proficiencies can and should engage in higher-order thinking when appropriate and supported by a teacher or peers. This is an important reminder to educators that emergent multilinguals should have many opportunities to engage with higher order comprehension skills. Furthermore, my study exemplified the many modes and ways my students express themselves, even when confused, frustrated, or struggling to articulate a thought.

In closing, this study highlighted how dynamic and strategic young emergent multilinguals can be in classroom contexts. The interactions with students, knowing their backgrounds and needs, and intentionally building a relevant intervention with these factors in mind, clarified students' challenges and built a foundation for further inquiry. Specifically, reflecting on Mariana's ability to tell me she was making an inference, or challenge another students' idea with her own, demonstrated her developing ability to

engage in higher-order tasks with differentiated and relevant support, despite her status as an emergent multilingual. Classroom moments, although seemingly small, and other insights from my students, give reason for further study on equitable and culturally relevant literacy practices, more specifically, study on how to engage young emergent multilinguals with higher-order thinking and reading skills. Finally, if the goal is to improve instruction, and create equitable and culturally-relevant literacy practices, these pedagogical inquiries and strategies cannot be fully illustrated through large-scale quantitative studies and cognitive frameworks, although those studies are important. Rather, complementary approaches and sociocultural and discourse frameworks could illuminate how young multilinguals interact with texts and show their comprehension, hopefully leading to instruction that fully engages young emergent multilinguals and celebrates their many experiences and skills.

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APPENDIX A: PRE- AND POST-ASSESSMENT RUBRIC

Teacher Rubric: Pre- and post-assessment, supplemental to Fountas & Pinnell
Student Name:_____ Date:_____
Book/Image Title _____
Inference/Comprehension Rubric for pre/post assessment (For teacher)

Student...	**0**	**1**	**2**	**3**
expresses comprehension the text and can retell the main events of the story in order	Student cannot answer basic comprehension questions. Student does not respond, or uses few words to describe the story	Student can answer some basic comprehension questions. Student has short, 1-2 word responses for events in the story, does not express important events	Student can answer basic comprehension questions, but has short, few word responses, only expresses a few events in the story, not in order.	Student can answer basic comprehension questions and student uses complete, descriptive sentences, describing who did what and major events in order
expresses prior knowledge and/or experience (when relevant) to make an inference (in response to a question)	Student does not express prior knowledge and/or experience to make an inference	Student expresses limited prior knowledge and/or experience to make an inference, and is unrelated to the story	Student expresses prior knowledge and/or experience to make an inference, but is unrelated to the story	Student expresses prior knowledge and/or experience when relevant to make an inference and is related to the story
uses text/visual evidence to make an inference (in response to a question)	Student does not use text/visual evidence to make an inference	Student justifies inferences rarely using text/visual evidence to make an inference, does not relate to the task/question being asked	Student justifies inferences using text/visual evidence some of the time to make an inference, but may not relate to the task/question being asked	Student justifies inferences most of the time using text/visual evidence to make an inference, relates to the task/question being asked.
uses "thinking" sentence stems when expressing an inference (i.e. I think__ because____, I know _____ because____ ,	Student does not provide a response, or thinking stem.		Student uses thinking stems some of the time, when expressing an inference.	Student uses a uses "thinking" sentence stems most of the time when expressing an inference

I predict_____ because____)				
responses make sense (i.e. sentences are linguistically/structurally coherent)	Student does not provide a response	Student uses few words and sentences do not make sense	Student responses make sense some of the time	Student responses makes sense most of the time, are linguistically and structurally coherent.

APPENDIX B: TAXONOMY OF LANGUAGE AND LITERACY FOR GUIDED READING BOOKS

Taxonomy of Language and Literacy for Leveled Books

	1	2	3	4	5	N/A
Content Language	Does not include content specific vocabulary	Includes some content specific vocabulary	Includes consistent content specific vocabulary	Includes a moderate level if content specific vocabulary	Includes a high level of content-specific vocabulary	
Familiarity of Content and Theme	Book has familiar content about home, school, or neighborhood,	Book has familiar content about home, school, neighborhood or academic subjects	Book includes and may extend beyond familiar content about home, school, neighborhood or academic subjects	Book includes and extends beyond familiar content about home, school, neighborhood or academic subjects, settings that are not typical of many children's experience,	Book extends beyond familiar content about home, school, neighborhood or academic subjects, settings that are not typical of many children's experience, may include new content or abstract concepts.	
Complexity of Storyline (fiction)	There is no storyline, simple topic	Storyline includes simple sequence of events	Storyline includes a longer sequence of events, includes character's feelings and motivations	Storyline may or may not be sequential includes character's feelings and motivations	Storyline may not be sequential , includes character's feelings and motivations and complex events	
Word complexity (Sight words, Multisyllabic, compound words, plurals, contractions)	Words are simple, include monosyllabic or two syllable words. Include beginning sight words	Words are simple, two or three syllable words. Beginning sight words and basic nouns	Words are simple, two or three syllable words. Beginning sight words and some complex words	Words are multisyllabic, include a variety of sight words and some complex words	Words are multisyllabic, include a variety of sight words and complex words with contractions, compound	

	and basic nouns				words and plurals	
Supportive illustrations and photos	Illustrations and photos are simple and are included on every page, directly support text	Illustrations are and photos are simple and are on most pages, and directly support text	Illustrations and photos are on most pages, and support text and themes	Illustrations and photos are on most pages, and may include multiple events and ideas	There are minimal illustrations and photos. Illustrations and photos include multiple events and ideas	
Sentence complexity	Sentences are simple, contain 3-4 words	Sentences are simple, contain 5-7 words	Sentences are simple but varied lengths	Sentences are longer with some complex sentences and clauses.	Many sentences are complex and varied with several longer sentences and clauses.	

APPENDIX C: ILLUSTRATIONS AND FIGURES

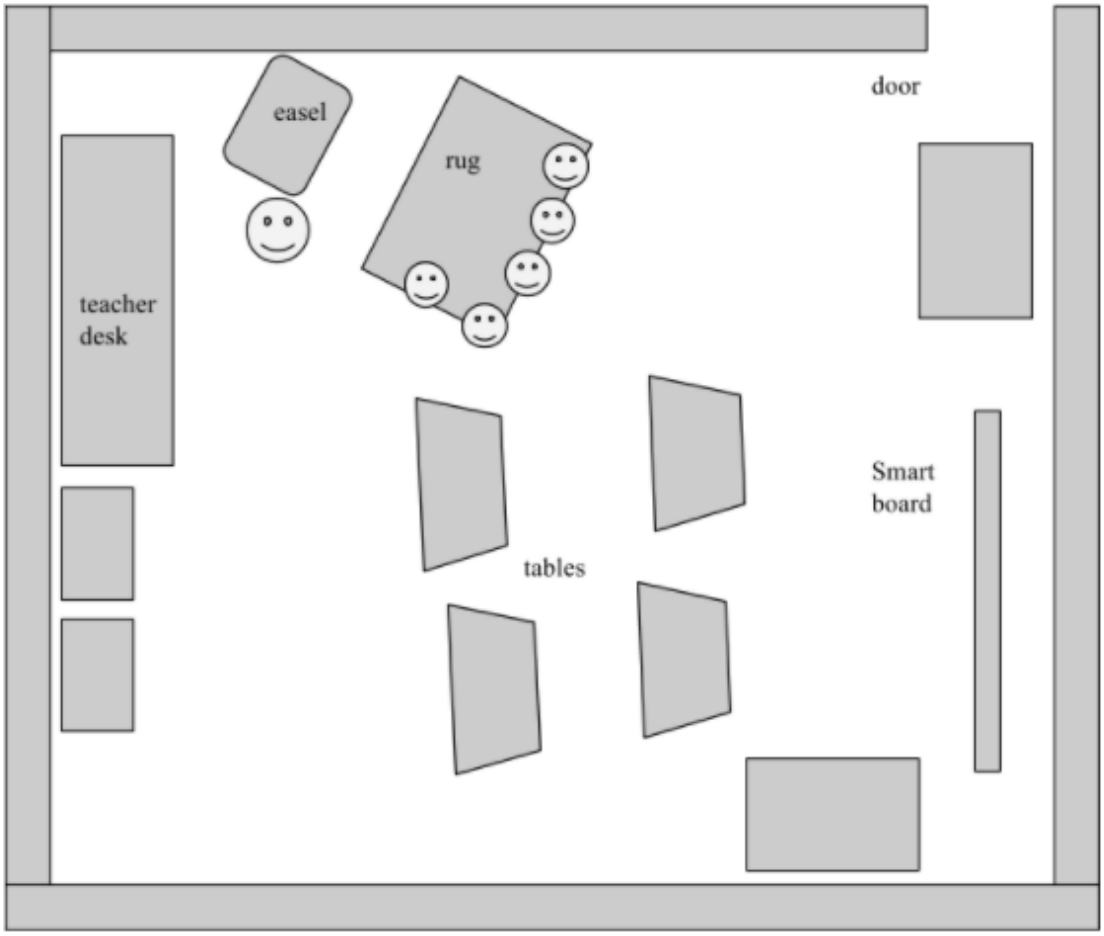

Figure 2: Classroom layout

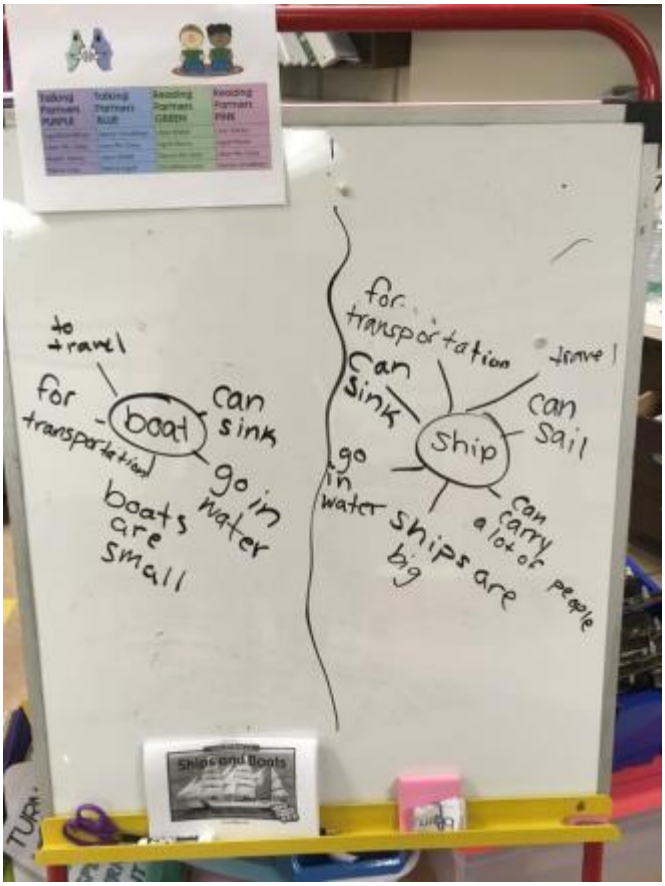

Figure 3: Building background graphic organizer, *Boats and Ships* book

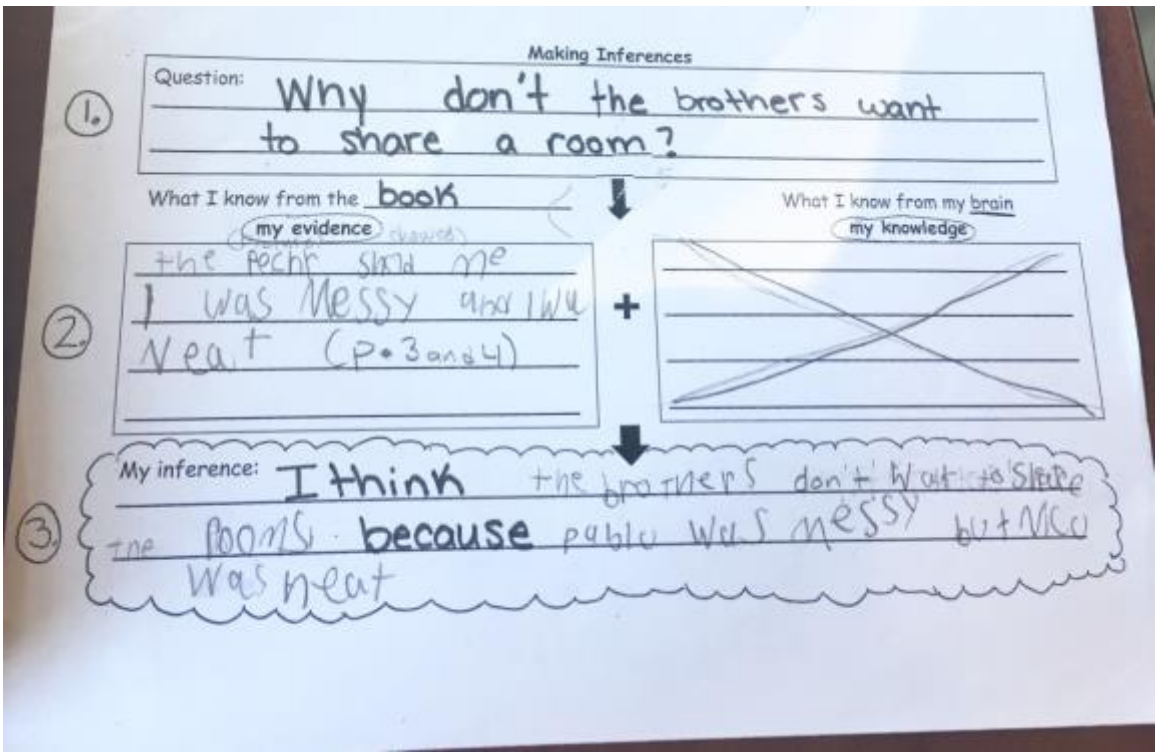

Figure 4: Student Sample writing graphic organizer, *Brother Messy, Brother Neat* bo

APPENDIX D: TRANSCRIPTION CONVENTIONS

[]	non-verbal actions, transcriber notes
(.)	short pause
//	overlapping speech
[...]	omitted speech
=	one turn follows on from the previous one without any gap

APPENDIX E: UNIVERSITY OF MINNESOTA INSTITUTIONAL REVIEW BOARD PERMISSION AND MINNEAPOLIS PUBLIC SCHOOLS RESEARCH EVALUATION DEPARTMENT PERMISSION

Leah Shepard-Carey <shepa090@umn.edu>

1608E92064 - PI Carey - IRB - Exempt Study Notification
1 message

irb@umn.edu <irb@umn.edu> Thu, Oct 20, 2016 at 3:57 PM
To: shepa090@umn.edu

TO : mbigelow@umn.edu, shepa090@umn.edu,

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #1 INSTRUCTIONAL STRATEGIES IN EDUCATIONAL SETTINGS.

Study Number: 1608E92064

Principal Investigator: Leah Carey

Title(s):
Scaffolding Inferences with Young English Language Learners

This e-mail confirmation is your official University of Minnesota HRPP notification of exemption from full committee review. You will not receive a hard copy or letter. This secure electronic notification between password protected authentications has been deemed by the University of Minnesota to constitute a legal signature.

The study number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

For research in schools: Any changes to this research must be approved by the IRB and school district involved before initiation.

If you requested a waiver of consent or documentation of consent and you received this email, approval for the waiver has been granted.

This exemption is valid for five years from the date of this correspondence and will be filed inactive at that time. You will receive a notification prior to inactivation. If this research will extend beyond five years, you must submit a new application to the IRB before the study's expiration date. Please inform the IRB when you intend to close this study.

Upon receipt of this email, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.